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1 Introduction

DiffDog Server is a powerful differencing software solution that enables you to compare files, directories (including ZIP format), URLs, as well as tabular data from CSV files and databases. DiffDog Server runs on Windows, Linux, and macOS systems.

Main Features

- **Command-line Interface.** DiffDog Server runs as a service. You can run comparisons by invoking DiffDog Server either from the command line interface or through executable scripts.
- **Run comparisons remotely.** You can compare files either directly on the server machine where DiffDog Server is installed, or call a comparison remotely from a client machine. The DiffDog Server installation includes a portable DiffDog Command Line Client, which can be copied to multiple machines within your organization, thus enabling you to call a running DiffDog Server remotely.
- **Cross-platform:** Both DiffDog Server and DiffDog Command Line Client run on Linux, macOS, and Windows.
- **URL Comparisons.** In addition to files and directories, you can also compare URLs. For example, you can compare a page like http://www.example.org/page1.html with http://www.example.org/page2.html. Combinations between URL and files are also possible, for example, http://www.example.org/page1.html with C:\page2.html.
- **Three-way comparisons.** In addition to standard two-side comparisons that involve a "left" file and a "right" side, you can also perform three-way comparisons (when comparing files). This is useful, for example, when two different versions exist of the same original file, and you need to cross-compare all versions.
- **Word document comparisons.** Comparison of Microsoft Word 2003 or later documents (.docx, .dotx) is also supported. Microsoft Word is not required to be installed in order to perform such comparisons.
- **Binary, text, and XML.** Depending on the kind of files you are comparing, you can choose between any of the following comparison modes: binary, text, or XML. Alternatively, you can let the application detect the comparison mode automatically based on file extension. For even more advanced needs, you can create custom rules to choose a specific mode automatically based on file extension.
- **Advanced filters and comparison options.** You can flexibly include or exclude files or directories from a comparison by means of filters. Additional options are available that help you deal with case-sensitive versus insensitive comparisons, ignoring files based on size or modification time, as well as various ways to treat special characters like spaces, tabs, or carriage returns.
- **Comparison of database data.** You can perform comparisons of recordsets originating from a database table, view, or a custom SQL query. The source databases can be of different kinds and may be local file-based databases such as SQLite or databases running on a remote database server, such as SQL Server. You can configure multiple such data comparisons by defining all the database connection details and other parameters in an .ini configuration file. You can then supply named data comparison jobs as arguments to the data-diff command and run multiple comparisons in a single call of the executable.
- **Comparison of CSV files.** You can perform side-by-side comparisons of tabular data from comma-separated or tab-separated values (CSV and TSV) files. You can also compare a CSV file with a database table, view or recordset.
- **Integration with DiffDog desktop.** If you have already created comparison files (.filedif, .dirdif) in DiffDog (https://www.altova.com/diffdog), and if DiffDog Server runs on Windows, you can compare them at the command line as well. This enables you to automate or integrate frequently-used comparisons into your custom scripts or processes. On Windows, any custom XML or directory filters that you have created in DiffDog can also be invoked as command line options when you run a comparison. Running database comparison files (.dbdif) is possible on Linux and macOS with limitations, see below.
Get comparison results as text, XML or SQL. When performing a comparison, you can choose the format in which comparison results are reported: text, XML, or SQL. The latter is applicable when the right side of the comparison is a database and it consists of SQL statements that merge differences from the left side to the right side of the comparison (INSERT, UPDATE, and DELETE statements).

Limitations

- The connection between client and server is currently unencrypted (plain HTTP).
- Running file and directory comparison files (.filedif, .dirdif) created with DiffDog desktop is supported only on Windows. This limitation does not apply if you configure the comparison job directly in DiffDog Server.
- Running database data comparison files (.dbdif) created with DiffDog desktop is supported only on Windows, if CSV files are involved in the comparison. This limitation does not apply if you configure the comparison job directly in DiffDog Server. For the support details applicable when running database comparisons, see Supported Databases.

System Requirements

<table>
<thead>
<tr>
<th>System Type</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>Windows 7 SP1 with Platform Update, Windows 8, Windows 10</td>
</tr>
<tr>
<td>Windows Server</td>
<td>Windows Server 2008 R2 SP1 with Platform Update or newer</td>
</tr>
<tr>
<td>Linux</td>
<td>- CentOS 6 or newer</td>
</tr>
<tr>
<td></td>
<td>- RedHat 6 or newer</td>
</tr>
<tr>
<td></td>
<td>- Debian 8 or newer</td>
</tr>
<tr>
<td></td>
<td>- Ubuntu 16.04 LTS or newer</td>
</tr>
<tr>
<td>macOS</td>
<td>macOS 10.13 or newer</td>
</tr>
</tbody>
</table>

On Windows, DiffDog Server is available both as a 32-bit and 64-bit package.

Last updated: 10 March 2020
1.1  How It Works

After installation, the DiffDog Server files are copied to the default program installation directory.

Windows
C:\Program Files\Altova\DiffDogServer2020\nC:\Program Files (x86)\Altova\DiffDogServer2020\n
Linux
/opt/Altova/DiffDogServer2020/

macOS
/usr/local/Altova/DiffDogServer2020/

The program installation directory contains two executables that you will work with:

1. DiffDog Server executable, available in the bin subdirectory. This executable provides configuration-related commands, including commands for licensing DiffDog Server, starting it as a service, or resetting it to the default configuration. It also provides data differencing commands, such as the diff command. The diff command is one of the most important commands, and you can use it to run comparisons between any of the following: files, directories, or URLs.

2. DiffDog Command Line Client executable, available in the cmdlclient subdirectory. This executable provides only data differencing commands. This executable represents a lightweight, portable utility that calls DiffDog Server to run a comparison, even if the latter is on a different machine or operating system.

In this documentation, the DiffDog Command Line Client executable is alternatively referred to as "DiffDogCmdlClient".

To begin, let’s open a command line terminal and run a simple command that lists all the commands available in DiffDog Server:

Windows
"C:\Program Files\Altova\DiffDogServer2020\bin\DiffDogServer" help

Linux
/opt/Altova/DiffDogServer2020/bin/diffdogserver help

macOS
/usr/local/Altova/DiffDogServer2020/bin/diffdogserver help

Let’s now run an actual comparison between two local files. This time, make sure that you call the DiffDogCmdlClient (not server) executable with the diff command, as follows:

Windows
"C:\Program Files\Altova\DiffDogServer2020\cmdlclient\DiffDogCmdlClient.exe" diff file1.txt file2.txt

Linux
/opt/Altova/DiffDogServer2020/cmdlclient/bin/diffdogcmdlclient diff file1.txt file2.txt

macOS
/usr/local/Altova/DiffDogServer2020/cmdlclient/bin/diffdogcmdlclient diff file1.txt file2.txt
Note that, for the sake of simplicity, this documentation omits the full path to the executable when describing commands. Therefore, instead of the command above, this documentation uses:

```
<exec> diff file1.txt file2.txt
```

where `<exec>` is the path to either the DiffDog Server or DiffDog Command Line Client executable.

The command above is very simple and assumes that the files `file1.txt` and `file2.txt` exist in the current working directory of the command prompt (otherwise, refer to them using an absolute or a relative path). You can always change the working directory by typing `cd` followed by the directory path, for example:

```
cd C:\comparisons\
```

or, on a Linux machine:

```
cd /home/Altova/comparisons
```

Note the following:

- To call the executable (either client or server) just by name, without the full path, add the program installation directory to your system's PATH variable.
- On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix `"/"` before the name of the executable when calling it from the current directory of the command shell.

DiffDog Command Line Client can run either on the same machine as DiffDog Server, or on a different machine. When installed on another machine, the client it is capable of communicating with a remote DiffDog Server through HTTP. Consequently, the `diff` command can compare not only file or directory paths local to the client, but also paths on the remote machine where DiffDog Server runs. You can also compare a client-side file or directory with a remote server-side file or directory, or vice versa. Moreover, the client and the server can be on different operating systems (for example, the client may be running on Windows and the server on Linux). The advantage of such a setup is that it enables you to run comparisons from virtually any client configured to communicate with the server. For instructions about how to configure the server to accept calls from remote clients, see Configuring the Server.

The `diff` command provides a large number of additional options for advanced comparison needs, for example:

- You can specify whether files should be compared as text, XML, or binary files.
- You can create custom rules that let you automatically set a comparison mode (text, XML, binary) based on file extension.
- When two directories are compared, you can specify whether file contents are to be compared also.
- You can specify whether the file size or modification date should be ignored or taken into account when comparing files.
- When you compare text files, you can specify rules to exclude from the comparison files that match a certain name pattern.
- When you compare XML files, you can specify rules to exclude from the comparison certain XML elements and attributes.
- You can specify how the comparison results are to be generated. For example, you can redirect the comparison result (output) either to a file on the server, or to a file on the client. Regardless of the
option chosen, you can additionally view the output on screen. The comparison results can be either in text or in XML format.

This is not an exhaustive list; for reference to all available comparison options, see the `diff` command reference.
2 Installation

2.1 Processor Cores and Licenses

The licensing of Altova server products is based on the number of physical processor cores available on the product machine (as opposed to the number of logical cores). For example, a dual-core processor has two cores, a quad-core processor four cores, a hexa-core processor six cores, and so on. The number of cores licensed for a product must be greater than or equal to the number of cores available on that server machine, whether the server is a physical or virtual machine. For example, if a server has eight cores, you must purchase an 8-core license. You can also combine licenses to achieve the core count. So, two 4-core licenses can be used for an eight-core server instead of one 8-core license.

If you are using a computer server with a large number of CPU cores but only have a low volume to process, you may also create a virtual machine that is allocated a smaller number of cores, and purchase a license for that number. Such a deployment, of course, will have less processing speed than if all available cores of the computer were utilized.

Note: Each Altova server product license can be used for only one client machine at a time—the machine on which the Altova server product is installed—even if the license has unused licensing capacity. For example, if a 10-core license is used for a client machine that has 6 CPU cores, then the remaining 4 cores of licensing capacity cannot be used simultaneously for another client machine.

Single-thread execution

If an Altova server products allow single-thread execution, an option for Single-thread execution will be available. In these cases, if an Altova server-product license for only one core is available in the license pool, a machine with multiple cores can be assigned this one-core license. In such a case, the machine will run that product on a single core. Processing will therefore be slower, because multi-threading (which is possible on multiple cores) will not be available. The product will be executed in single thread mode on that machine.

To assign a single-core license to a multiple-core machine, in LicenseServer, select the Limit to single thread execution check box for that product.

Estimate of core requirements

There are various external factors that influence the data volumes and processing times your server can handle (for example: the hardware, the current load on the CPU, and memory allocation of other applications running on the server). In order to measure performance as accurately as possible, test the applications in your environment with data volumes and in conditions that approximate as closely as possible to real business situations.
2.2 Linux

2.2.1 Installing DiffDog Server

System requirements

- Linux
  - CentOS 6 or newer
  - RedHat 6 or newer
  - Debian 8 or newer
  - Ubuntu 16.04 LTS or newer

The following libraries are required as a prerequisite to install and run the application. If the packages below are not already available on your Linux machine, run the command `yum` (or `apt-get` if applicable) to install them.

<table>
<thead>
<tr>
<th>Required by</th>
<th>CentOS, RedHat</th>
<th>Debian</th>
<th>Ubuntu</th>
</tr>
</thead>
<tbody>
<tr>
<td>LicenseServer</td>
<td>krb5-libs</td>
<td>libgssapi-krb5-2</td>
<td>libgssapi-krb5-2</td>
</tr>
</tbody>
</table>

Prerequisites

- Perform installation either as root user or as a user with sudo privileges.
- The previous version of DiffDog Server must be uninstalled before a new one is installed.

Installing DiffDog Server

1. Download the installation package from https://www.altova.com/download#server to a local directory.
2. Change to the directory where you downloaded the installation package, for example:
   ```
   cd /home/User/Downloads
   ```
3. Install the DiffDog Server package.
   ```
   [Debian, Ubuntu]   sudo dpkg --install diffdogserver-2020-debian.deb
   [CentOS, RedHat]   sudo rpm -ivh diffdogserver-2020-1.x86_64.rpm
   ```

Note: You may need to adjust the name of the package above to match the current release or service pack version.

4. Start the DiffDog Server service.
   ```
   [CentOS 6]       sudo initctl start diffdogserver
   [CentOS 7]       sudo systemctl start diffdogserver
   [Debian 8]       sudo systemctl start diffdogserver
   [RedHat 6]       sudo initctl start diffdogserver
   ```
**Installation**

**Linux**

---

**[RedHat 7]:**    sudo systemctl start diffdogserver
**[Ubuntu 16.04]:** sudo systemctl start diffdogserver

---

**Licensing DiffDog Server**

1. Ensure that the latest version of Altova LicenseServer ([https://www.altova.com/licenseserver](https://www.altova.com/licenseserver)) is installed and running either on the local machine or network.

2. Register DiffDog Server with Altova LicenseServer. For this, you need to know either the host name or the IP address of the computer where LicenseServer runs. For example, if LicenseServer runs on 127.0.0.1, you can register it as follows:

   ```
   sudo ./diffdogserver licenseserver 127.0.0.1
   ```

   **Note:** The command above assumes you are calling the executable from the program installation directory.

3. Log on to LicenseServer administration interface and assign the license to the machine where DiffDog Server runs.

For more information about licensing, refer to Altova LicenseServer documentation ([https://www.altova.com/documentation](https://www.altova.com/documentation)).

---

**2.2.2 Viewing Currently Installed Products**

To check if an Altova server product is installed:

- Run the following command:

  ```
  [Debian, Ubuntu]  dpkg --list | grep Altova
  [CentOS, RedHat]  rpm -qa | grep server
  ```

---

**2.2.3 Uninstalling DiffDog Server**

To uninstall DiffDog Server:

- Run the following command:

  ```
  [Debian, Ubuntu]  sudo dpkg --remove diffdogserver
  [CentOS, RedHat]  sudo rpm -e diffdogserver
  ```

If you need to uninstall other packages, use the same command as above and supply the package you want to remove as argument. For example:
[Debian, Ubuntu] sudo dpkg --remove licenseserver
[CentOS, RedHat] sudo rpm -e licenseserver
2.3 macOS

2.3.1 Installing DiffDog Server

System requirements
macOS
macOS 10.13 or newer

Prerequisites
- Perform installation as a user with administrative (root) privileges.

Installing DiffDog Server
1. Download the disk image (.dmg) file from the Altova Download Center (https://www.altova.com/download) and click to open it. Once you do this, the installer appears as a new drive on your computer.
2. Double-click the package (.pkg) file, and go through the successive steps of the installation wizard. These are self-explanatory and include one step in which you have to agree to the license agreement before being able to proceed. When you complete the wizard, the DiffDog Server icon becomes available in Applications. The package is installed in the directory /usr/local/Altova/DiffDogServer2020/.
3. If you have not installed Altova License Server already, or if you want to upgrade to the latest version, double-click the corresponding package (.pkg) file and follow the on-screen instructions.
4. Start DiffDog Server as a service.

```
sudo launchctl load /Library/LaunchDaemons/com.altova.DiffDogServer.plist
```

Licensing DiffDog Server
1. Ensure that the latest version of Altova LicenseServer (https://www.altova.com/licenseserver) is installed and running either on the local machine or network.
2. Register DiffDog Server with Altova LicenseServer. For this, you need to know either the host name or the IP address of the computer where LicenseServer runs. For example, if LicenseServer runs on 127.0.0.1, you can register it as follows:

```
sudo diffdogserver licenseserver 127.0.0.1
```
3. Log on to LicenseServer administration interface and assign the license to the machine where DiffDog Server runs.

For more information, refer to Altova LicenseServer documentation (https://www.altova.com/documentation).
2.3.2  Uninstalling DiffDog Server

To uninstall DiffDog Server:

1. Stop the DiffDog Server service.

   ```
sudo launchctl unload /Library/LaunchDaemons/com.altova.DiffDogServer.plist
   ```

   To check whether a service has been stopped, open the Activity Monitor terminal and make sure that the service is not in the list. Double-check that the Activity Monitor shows all processes, not just "My processes" (On the View menu, click All processes.)

2. In Applications, right-click the DiffDog Server icon and select Move to Trash. Note that your DiffDog Server installation directory and configuration data are not removed by this step.

3. Optionally, if you want to remove the DiffDog Server installation directory as well, run the following command:

   ```
sudo rm -rf /usr/local/Altova/DiffDogServer2020/
   ```

Note: The steps above do not remove the configuration data from /var/Altova/DiffDogServer2020. Be aware that once the configuration data is removed, it cannot be recovered later.
2.4  Windows

2.4.1  Installing DiffDog Server

System requirements
- Windows 7 SP1 with Platform Update, Windows 8, Windows 10
- Windows Server 2008 R2 SP1 with Platform Update or newer

Prerequisites
- Perform installation as a user with administrative privileges.

Installing DiffDog Server
1. Download the installation file from the Altova Download Center (https://www.altova.com/download) and run it.
2. Optionally, select the installation language from the box in the lower left area of the wizard, and click Next. If necessary, you can change the language later from the command line.
3. Do one of the following:
   a. If you haven't installed Altova LicenseServer yet, leave the default settings as is. The wizard will install the latest version of Altova LicenseServer on the computer where you are running the wizard.
   b. If you haven't installed Altova LicenseServer yet and want to install Altova LicenseServer on another computer, clear the Install Altova LicenseServer on this machine check box, and then choose Register Later. In this case, you will need to install Altova LicenseServer and register DiffDog Server separately.
   c. If Altova LicenseServer has already been installed on your computer but it has a lower version than the one indicated by the installation wizard, leave the default settings as is. In this case, the installation wizard will automatically upgrade your LicenseServer version with the one indicated on the dialog box. Note that the existing registration and licensing information will be preserved after the upgrade.
   d. If Altova LicenseServer has already been installed on your computer or network, and if it has the same version as the one indicated by the wizard, do the following:
      i. Clear the Install Altova LicenseServer on this machine check box.
      ii. Under Register this product with, choose the Altova LicenseServer instance on which you want to register DiffDog Server, or choose Register later. Note that you can always select Register Later if you want to ignore the LicenseServer associations and carry on with the installation of DiffDog Server.
4. Click Next.
5. Optionally, define the port number on which HTTP clients can communicate with DiffDog Server. You can also change this setting later, see Configuring the Server.
6. Optionally, define the Windows service configuration applicable to DiffDog Server. For more information, see Configuring Windows Service Settings.

7. Follow the wizard instructions to complete the installation. When the installation completes, the Altova ServiceController icon (Windows) is added in the system notification area.

Licensing DiffDog Server

1. Ensure that the latest version of Altova LicenseServer (https://www.altova.com/licenseserver) is installed and running either on the local machine or network.

2. If you haven't done so already during installation, register DiffDog Server with Altova LicenseServer. For this, you need to know either the host name or the IP address of the computer where LicenseServer runs. For example, if LicenseServer runs on 127.0.0.1, you can register it as follows:

   DiffDogServer.exe licenseserver 127.0.0.1

3. Log on to LicenseServer administration interface and assign the license to the machine where DiffDog Server runs.

For more information, refer to Altova LicenseServer documentation (https://www.altova.com/documentation).

2.4.2 Configuring Windows Service Settings

During the installation of DiffDog Server on a Windows operating system, it is possible to configure the following settings:

- How should DiffDog Server start up as a Windows service: automatic, on demand, delayed automatic, or disabled.
- The operating system user account to be used by DiffDog Server as a Windows service: Local System, Local Service, Network Service, or Other User.
If DiffDog Server is configured to run as **Other User**, you can set the username and password of this user, similar to how this is done in the Windows Services management console.

The settings have the same meaning as when you change the service properties from the Windows Services management console. To define the settings above during installation, click **Change** next to **Service configuration**.

If you need to change these settings after installation, open the Windows Services management console, and then change the properties of the required service from there. To open the Windows Services management console, open a command line window and type `Services.msc`. 
3 Configuring the Server

Configuration of DiffDog Server involves setting the server configuration file—one such file in .ini format exists on the server machine in the application data directory:

- **Linux**: /var/opt/Altova/DiffDogServer
- **Mac**: /var/Altova/DiffDogServer
- **Windows**: C:\ProgramData\Altova\DiffDogServer

For typical scenarios where configuration of the server is required, see Configuring the Server for Remote Comparisons and Restricting Access to Server Paths.

In addition, if you want to use DiffDog Server for remote comparisons, a client configuration file, also in .ini format, must be configured on each client machine that connects to DiffDog Server remotely.

You can change the settings available in configuration files by editing the files in a text editor. For reference to all settings available in these files, see:

- Server Configuration File
- Client Configuration File

After editing the server configuration file, restart DiffDog Server as a service.

For information about restarting DiffDog Server as a service, see:

- Starting and Stopping Services (Linux)
- Starting and Stopping Services (macOS)
- Starting and Stopping Services (Windows)
3.1 Configuring the Server for Remote Comparisons

To enable remote DiffDog Clients to call DiffDog Server, take the following steps:

1. On the server machine, make sure that DiffDog Server is installed, licensed and running (see Setup on Windows, Setup on Linux and Setup on macOS).
2. On the server machine, define the HTTP host and port where DiffDog Server should be listening for client requests. By default, DiffDog Server is configured to listen to HTTP connections on the address and port specified in a server configuration file. By editing the server configuration file, you can specify a different address and port. To make DiffDogServer accept incoming connections from other machines, ensure that the http.socket-host parameter is set to 0.0.0.0.

Ensure that the host and port on the server machine are not blocked by the firewall. For example, on a Windows server, you can let an application through the firewall by editing the rules available in Control Panel\All Control Panel Items\Windows Defender Firewall\Advanced Settings\Inbound Rules.

3. Restart DiffDog Server as a service. For instructions, see:

- Starting and Stopping Services (Linux)
- Starting and Stopping Services (macOS)
- Starting and Stopping Services (Windows)

4. Do one of the following:

a. If the client machine runs on the same operating system and platform as the server machine, locate the cmdlclient subdirectory of the program installation directory and copy it to the client machine. You will find this directory at the following path:

   Windows  C:\Program Files\Altova\DiffDogServer2020\cmdlclient
   Linux  /opt/Altova/DiffDogServer2020/cmdlclient
   macOS  /usr/local/Altova/DiffDogServer2020/cmdlclient

   At minimum, you should copy the executable and the .ini configuration file available in the same directory; other files are optional. If you intend to call DiffDog Server remotely from more than one client machine, then copy the cmdlclient directory to each client machine that needs to call DiffDog Server.

b. If the client machine runs on a different operating system or platform than the server machine, take the following steps:

   a) Download the server installation package from the Altova download page (https://www.altova.com/download) and install it on the client operating system. After installation, you will find the client files in the cmdlclient subdirectory relative to the program installation directory.

   b) Copy the cmdlclient subdirectory to another location and uninstall the server package from the client machine.
5. On the client machine, edit the client configuration file so that it points to the address and port where DiffDog Server listens for HTTP requests. For example, let’s assume that DiffDog Server listens on 192.0.2.0 and port 29800. In this case, edit the client configuration file so that server.host and server.port parameters have these respective values.

On the client machine, you are now ready to call the remote DiffDog Server in order to compare some files or directories. For example, the command below will compare path\to\my\file1.txt on the client with path\to\my\file2.txt on the server, using text comparison mode. Note that, in order for diff command to work correctly, these file paths must actually exist on the client and server machine, respectively.

```
diffdogcmdlclient diff --client-left=path\to\client\file.txt --server-right=path\to\server\file.txt --mode=text
```

When you run the command, DiffDog Client reads the connection details from the client configuration file, connects to DiffDog Server, and performs the comparison. As stated before, the configuration file must point to a host and port where DiffDog Server is up and running, and listens for HTTP requests.

### Troubleshooting

The following table lists common problems that you might encounter, and their solution.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>On running the DiffDogCmdlClient.exe on Windows, an error message is displayed at the command line: &quot;This version is not compatible with the version of Windows you're running. Check your computer's system information and then contact the software publisher&quot;.</td>
<td>This may occur if you run a 64-bit executable on a 32-bit operating system. See step 4b above for a solution.</td>
</tr>
<tr>
<td>On running the diff command, an error message is displayed at the command line: &quot;Unknown error processing the command line&quot;.</td>
<td>Ensure that paths on the server are supplied with the help of --server-left or --server-right options. Likewise, ensure that paths on the client are supplied with the --client-left or --client-right options.</td>
</tr>
<tr>
<td>On running the diff command, an error message is displayed at the command line: &quot;Server is restricting file access to aliases, but client didn't specify an alias name&quot;.</td>
<td>Specify the --alias command line option.</td>
</tr>
</tbody>
</table>
3.2 Restricting Access to Server Paths

For security reasons, administrators can optionally configure DiffDog Server to restrict server paths accessible to clients that connect to the server machine. For example, if server paths are restricted, a comparison such as the one below (which compares a file on the client with one on the server) would no longer be allowed by default:

```
diffdogcmdlclient diff --client-left=path\to\client\file.txt --server-right=path\to\server\file.txt --mode=text
```

When server paths are restricted, clients must always specify the option `--alias` when running a comparison that includes server paths. An alias is a designated directory on the server machine where remote comparisons are allowed. Any server paths outside of the alias directory are not accessible to remote clients and cannot be included in comparisons.

On the server machine, administrators can restrict server paths as follows:

1. Open the server configuration file.
2. Set the option `restrict-to-aliases = true`.
3. For each directory that must be considered an alias, add an `[alias]` configuration key, for example:

   ```
   restrict-to-aliases = true
   [alias:sandbox1]
   path = C:\Public\Comparisons
   [alias:sandbox2]
   path = D:\Comparisons
   ```

4. Restart DiffDog Server as a service.

Clients can now run a comparison that include either `sandbox1` or `sandbox2` as command line option. Specifically, if the path `C:\Public\Comparisons\file.txt` exists on the server, a client can refer to it as follows:

```
diffdogcmdlclient diff --client-left=path\to\client\file.txt --server-right=file.txt --mode=text --alias=sandbox1
```

A client can always view the list of aliases available on the server by running the `aliases` command.
3.3 Server Configuration File

After installation, DiffDog Server contains a server configuration file called `server_config.ini` located in the application data directory. The application data directory depends on the operating system:

- **Linux** /var/opt/Altova/DiffDogServer
- **Mac** /var/Altova/DiffDogServer
- **Windows** C:\ProgramData\Altova\DiffDogServer

To create a DiffDog Server configuration file with the default configuration settings, run the `createconfig` command.

The server configuration file includes the following options.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>hide-alias-paths</td>
<td>An alias is a directory path on the server that clients are allowed to access when performing remote comparisons. This option controls the level of detail that clients can see when they run the <code>aliases</code> command. It is meaningful if the <code>restrict-to-aliases</code> option is set to <code>true</code>. Valid values:</td>
</tr>
<tr>
<td></td>
<td><strong>False</strong> Allow clients to view the list of aliases defined on the server along with the paths to which each alias points.</td>
</tr>
<tr>
<td></td>
<td><strong>True</strong> Allow clients to view just the list of aliases defined on the server; do not show any paths.</td>
</tr>
<tr>
<td></td>
<td>See also: <a href="#">Restricting Access to Server Paths</a></td>
</tr>
<tr>
<td>http.access-file</td>
<td>Defines the name and location of the HTTP access log file. The access file contains information about access-related activity. It contains information that is useful for resolving connection issues.</td>
</tr>
<tr>
<td>http.environment</td>
<td>Sets the environment (development or production). The development production allows for easier debugging compared to the production one. Valid values:</td>
</tr>
<tr>
<td></td>
<td><strong>production</strong> Set environment to production.</td>
</tr>
<tr>
<td></td>
<td><strong>development</strong> Set environment to development.</td>
</tr>
<tr>
<td>http.error-file</td>
<td>Defines the name and location of the HTTP error file. The error file contains errors related to traffic to and from the server. If there are connection problems, this file can provide useful information towards resolving them.</td>
</tr>
<tr>
<td>http.log-screen</td>
<td>If you started DiffDog Server with the command <code>debug</code>, and if this option is set to <code>true</code>, then server activity is displayed in the command line console. Otherwise, server activity is not displayed. The log screen is displayed in addition to the writing of log files.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>http.socket-host</td>
<td>Defines the address (HTTP interface) on which DiffDog Server should listen for HTTP requests. This should be an IP address from one of the network interfaces configured at the machine or the name <code>localhost</code>. To have DiffDog Server listen on all interfaces, set this value to <code>0.0.0.0</code>. If it should listen for local requests only, set this value to <code>127.0.0.1</code>.</td>
</tr>
<tr>
<td>http.socket-port</td>
<td>Defines the port on which DiffDog Server should listen for HTTP requests.</td>
</tr>
<tr>
<td>jvm-location</td>
<td>This option lets you specify the path to a Java VM (Virtual Machine) required for Java-specific tasks such as connecting to a database through JDBC.</td>
</tr>
<tr>
<td></td>
<td>Note that adding a custom Java VM path is typically not necessary. By default, the application attempts to detect the Java VM path automatically based on the <code>JAVA_HOME</code> environment variable. On Windows, the Java VM path is determined by reading (in this order) the Windows registry and the <code>JAVA_HOME</code> environment variable.</td>
</tr>
<tr>
<td></td>
<td>The custom path added in the <code>jvm-location</code> option will take priority over any other Java VM path detected automatically. If set, the path must point to the <code>jvm.dll</code> (Windows), <code>jvm.so</code> (Linux), or <code>libjvm.dylib</code> (macOS) file found in the JDK installation directory.</td>
</tr>
<tr>
<td>language</td>
<td>Specifies the language of the command line interface. Valid values are <code>en</code>, <code>de</code>, <code>es</code>, <code>fr</code>, <code>ja</code> (English, German, Spanish, French, and Japanese).</td>
</tr>
<tr>
<td>restrict-to-aliases</td>
<td>Restricts access to server paths for remote clients connecting to DiffDog server. Valid values:</td>
</tr>
<tr>
<td></td>
<td><strong>True</strong>   Access to server paths is restricted. If you set this value, then at least one <code>[alias:&lt;identifier&gt;]</code> must be defined in the configuration file as well, see below. Any server paths outside of the alias directory are not accessible to remote clients and cannot be included in comparisons.</td>
</tr>
<tr>
<td></td>
<td><strong>False</strong>  Access to server paths is not restricted.</td>
</tr>
<tr>
<td>server.log-file</td>
<td>Defines the name and location of the server's log file. This file contains general activity events logged by the server, including licensing events.</td>
</tr>
<tr>
<td>server.output-root-dir</td>
<td>Specifies the directory where the output of all submitted jobs is saved.</td>
</tr>
<tr>
<td>server.unrestricted-filesystem-access</td>
<td>When set to <strong>True</strong> (the default value), output files are written directly to the location specified by the user (possibly overwriting existing files of the same name). Setting the value to <strong>True</strong> is meaningful if the client and server are on the same machine and you want to write the output files to any directory on that machine.</td>
</tr>
<tr>
<td></td>
<td>When set to <strong>False</strong>, output files are written to the output directory (see the <code>server.output-root-dir</code> option).</td>
</tr>
</tbody>
</table>
An alias is a directory path on the server that clients are allowed to access when performing remote comparisons. Creating aliases is meaningful if the option `restrict-to-aliases=true`. When `restrict-to-aliases=true`, clients must always specify the `--alias` option when running a comparison that includes server paths. For an example, see Restricting Access to Server Paths.

You can create multiple aliases, for example `[alias:name1]`, `[alias:name2]`, and so on. The name of each alias must be unique. An alias can have only one option: `path`.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>path</td>
<td>The path to the directory that DiffDog Command Line clients are allowed to access on the server.</td>
</tr>
</tbody>
</table>

For example, the following configuration creates an alias called `sandbox` for the directory `C:\Public`.

```plaintext
[alias:sandbox]
path = C:\Public
restrict-to-aliases = true
```

A `[datasource]` section defines the connection details to a database, and specifies various other parameters applicable when performing database comparisons. You can create multiple data sources if necessary. For more information, see Setting up Data Sources.
3.4 Client Configuration File

A client-side configuration file defines various configuration settings that affect comparisons and connectivity between DiffDog Command Line Client and a remote DiffDog Server. You must typically edit the client configuration file in order to achieve the following:

- Set up the communication between DiffDog Command Line Client and a remote DiffDog Server. In this case, the `server.address` and `server.port` parameters in the client configuration file must point to the machine where DiffDog Server runs.
- Change the language of the command line interface (for the client).
- Set default values for various options when you run a comparison. For example, if you don't specify a comparison mode (binary, text) when comparing files, the application will use the default comparison mode as it is configured in the client configuration file.
- Define XML filters. An XML filter is useful when you are comparing XML files. It lets you ignore attributes or elements with a specific name during comparison.
- Define directory filters. When you compare directories, a directory filter lets you include or ignore files or directories that follow a specific pattern.
- Define connections to data sources such as databases or CSV files.
- Other configuration options, as further described below.

If you do not need the functionality above, there is no need to set up a client configuration file. Otherwise, you can find a sample client configuration file in the `cmdline` subdirectory relative to the program installation directory; it is called `client_config.ini.sample`. To set up your custom configuration file, create a copy of `client_config.ini.sample` and remove the `.sample` part from the file name.

When you run a comparison, you can set the path to the custom configuration file by setting the `--c` option. If you do not set the `--c` option, the DiffDog Command Line Client executable attempts to read the client configuration file from the same directory. If there is no configuration file in the same directory as the executable, the default values as described in the command line help and this documentation apply.

To view the current configuration, run the `showcfg` command.

The client configuration file includes the options listed below.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>jvm-location</code></td>
<td>This option lets you specify the path to a Java VM (Virtual Machine) required for Java-specific tasks such as connecting to a database through JDBC. Note that adding a custom Java VM path is typically not necessary. By default, the application attempts to detect the Java VM path automatically based on the <code>JAVA_HOME</code> environment variable. On Windows, the Java VM path is determined by reading (in this order) the Windows registry and the <code>JAVA_HOME</code> environment variable. The custom path added in the <code>jvm-location</code> option will take priority over any other Java VM path detected automatically. If set, the path must point to the <code>jvm.dll</code> (Windows), <code>jvm.so</code> (Linux), or <code>libjvm.dylib</code> (macOS) file found in the JDK installation directory.</td>
</tr>
</tbody>
</table>
### Configuring the Server Client Configuration File

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>language</td>
<td>Specifies the language of the command line interface (for the client). Valid values are en, de, es, fr, ja (English, German, Spanish, French, and Japanese).</td>
</tr>
<tr>
<td>server.address</td>
<td>Specifies the address of the remote host where DiffDog Server is listening for HTTP requests.</td>
</tr>
</tbody>
</table>
| server-alias  | If the server administrator has restricted access to server paths for security reasons, you can no longer run comparisons that refer server file paths directly, see also Restricting Access to Server Paths. Instead, you need to specify the name of an alias by means of the **--alias** option. Alternatively, you can set the `server-alias` option in the client configuration file, so that you don’t have to enter it at the command line. For example, the following configuration defines a default alias called **sandbox**:  

```
server-alias=sandbox
```

**Note:** If you set the **--alias** option at the command line, it takes precedence over the value in the configuration file. |
| server.port   | Specifies the remote port where DiffDog Server is listening for HTTP requests.                                                                |
| zip-as-dir    | When you run the `diff` command without setting the **--zip-as-dir** option, the executable will look for it in this configuration file. Set here the default preferred value for this option. |
| whitespace-mode| When you run the `diff` command without setting the **--whitespace-mode** option, the executable will look for it in this configuration file. Set here the default preferred value for this option. |

### [file-types]

When you run the `diff` command without specifying a comparison mode through the **--mode** option (text, binary, or XML), the application decides the comparison mode automatically for each file based on extension (that is, **--mode=auto**). In the options below, you can define what file extensions should be treated as text, binary, or XML, whenever the comparison mode is not explicitly set.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>A comma-separated list of file extensions that are treated as text by default.</td>
</tr>
<tr>
<td>xml</td>
<td>A comma-separated list of file extensions that are treated as XML by default.</td>
</tr>
<tr>
<td>binary</td>
<td>A comma-separated list of file extensions that are treated as binary by default.</td>
</tr>
</tbody>
</table>
### Configuring the Server

[xml]

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ignore-namespace</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-namespace</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>ignore-prefixes</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-prefixes</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>resolve-entities</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-resolve-entities</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>ignore-text</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-text</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>ignore-case-in-names</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-case-in-names</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>ignore-case-in-text</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-case-in-text</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>ignore-markup-attributes</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-markup-attributes</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>ignore-markup-cdata</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-markup-cdata</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>ignore-markup-comments</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-markup-comments</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>ignore-markup-processing-instructions</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-markup-processing-instructions</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>ignore-markup-doctype-decls</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-markup-doctype-decls</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>ignore-markup-xml-decls</td>
<td>When you run the <strong>diff</strong> command without setting the <code>--xml-ignore-markup-xml-decls</code> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>order-by-elements</td>
<td>When you run the <strong>diff</strong> command without setting the <strong>--xml-order-by-elements</strong> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>order-by-attributes</td>
<td>When you run the <strong>diff</strong> command without setting the <strong>--xml-order-by-attributes</strong> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>order-by-text</td>
<td>When you run the <strong>diff</strong> command without setting the <strong>--xml-order-by-text</strong> option, the executable will look for it in this configuration file. Set here the default preferred value for this option.</td>
</tr>
<tr>
<td>order-by-list</td>
<td>When you run the <strong>diff</strong> command without setting the <strong>--xml-order-by-attribute-list</strong> option, the executable will look for it in this configuration file. Set here the default preferred value for this option. This must be a named list of attributes defined in the <strong>[xml.orderby:&lt;name-of-my-list&gt;]</strong> group.</td>
</tr>
</tbody>
</table>

**[xml.orderby:<identifier>]**

This option group represents a named list of XML attributes. When an XML comparison takes place, such a list will cause the XML elements to be ordered by specific attributes before comparison. For an example, see the **--xml-order-by-attribute-list** option. You can create multiple attribute lists, for example **[xml.orderby:list1]**, **[xml.orderby:list2]**, and so on. The name of each attribute list must be unique.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| attributes | Enter here the attribute by which XML elements must be ordered before comparison, for example:  

```plaintext
attributes = myattribute
```

You can also specify a comma-separated list of XML attributes, for example:

```plaintext
attributes = attr1, attr2, attr3
```

**[xml.filter:<identifier>]**

This option group represents a filter that lets you ignore attributes or elements with a specific name during comparison. You can create multiple such option groups, for example **[xml.filter:filter1]**, **[xml.filter:filter2]**, and so on. The name of each option group must be unique.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ignore-elements</td>
<td>Enter here a comma-separated list of XML elements that should be ignored when this filter is active.</td>
</tr>
<tr>
<td>ignore-attributes</td>
<td>Enter here a comma-separated list of XML attributes that should be ignored when this filter is active.</td>
</tr>
</tbody>
</table>
### Option: ignore-both
Enter here a comma-separated list of XML elements or attributes that should be ignored when this filter is active.

Once you define a filter in the configuration file, you can supply it at the command line using the `--xml-filter` option.

### Option: ignore-case
When you run the `diff` command without setting the `--ignore-case` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

### Option: ignore-blank-lines
When you run the `diff` command without setting the `--ignore-blank-lines` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

### Option: ignore-case
When you run the `diff` command without setting the `--dir-ignore-case` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

### Option: compare-file-content
When you run the `diff` command without setting the `--dir-compare-contents` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

### Option: compare-sizes
When you run the `diff` command without setting the `--dir-compare-sizes` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

### Option: compare-modification-times
When you run the `diff` command without setting the `--dir-compare-mod-times` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

### Option: ignore-modtime-interval
When you run the `diff` command without setting the `--dir-compare-mod-times-ignore-seconds` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

### [dir.filter:<identifier>]
This option group represents a filter that lets you include or ignore files or directories that follow a specific pattern. At the command line, you can specify directory filters using the `--directory-filter` option. In the configuration file, you can create multiple such option groups, for example `[dir.filter:filter1]`, `[dir.filter:filter2]`, and so on. The name of each option group must be unique. Each option group can contain one or more of the following options:
### Option | Description
--- | ---
ignore-files | A list of file extensions that should be excluded from the comparison (ignored) when this filter is active.
ignore-dirs | A list of directory names that should be excluded from the comparison (ignored) when this filter is active.
include-dirs | A list of directory names that should be included in the comparison when this filter is active.
include-files | A list of file extensions that should be included in the comparison when this filter is active.
include-archive-files | Windows-specific. Set this value to true if archive files should be included in the filter; false otherwise.
include_hidden_dirs | Windows-specific. Set this value to true if hidden directories should be included in the filter; false otherwise.
include_hidden_files | Windows-specific. Set this value to true if hidden files should be included in the filter; false otherwise.
include_readonly-files | Windows-specific. Set this value to true if read-only files should be included in the filter; false otherwise.
include_system_dirs | Windows-specific. Set this value to true if system directories should be included in the filter; false otherwise.
include_system_files | Windows-specific. Set this value to true if system files should be included in the filter; false otherwise.

Note that the application contains a few built-in directory filters (and you don't need to create them since they will be recognized even if you didn't define them in the configuration file). You can however alter the definition of these filters in the configuration file, in which case your filter will override the built-in configuration. The built-in filters are as follows:

### Filter identifier | Purpose
--- | ---
text | When this filter is active and a directory comparison is performed, only files with the following extensions are included in the comparison: *.asp, *.c, *.cc, *.cpp, *.cs, *.css, *.cxx, *.h, *.hpp, *.htm, *.html, *.java, *.jsp, *.rc, *.tlh, *.tli, *.txt.
# Client Configuration File

## Configuring the Server

<table>
<thead>
<tr>
<th>Filter identifier</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>cvs</strong></td>
<td>When this filter is active and a directory comparison is performed, files with the following file extensions are ignored: .#*, .cvsignore, .cvsirc, .cvswrappers, .cvspass, .rhosts. Also, any directory with the name CVS is ignored. On Windows, read-only and archive files are also included in the comparison.</td>
</tr>
<tr>
<td><strong>svn</strong></td>
<td>When this filter is active and a directory comparison is performed, any directory with the name .svn is ignored. On Windows, read-only and archive files are included in the comparison.</td>
</tr>
<tr>
<td><strong>git</strong></td>
<td>When this filter is active and a directory comparison is performed, any directory with the name .git is ignored. Also, any file with the name .gitignore is ignored. On Windows, read-only and archive files are included in the comparison.</td>
</tr>
</tbody>
</table>

### [datasource:<name>]

A [datasource] section defines the connection details to a database, and specifies various other parameters applicable when performing database comparisons. You can create multiple data sources if necessary. For more information, see Setting up Data Sources. 

### [datadiff:<name>]

A [datadiff] section defines the parameters of a database data comparison job that will be run with the datadiff command. You can create multiple [datadiff] sections if necessary. For more information, see Setting up CSV and Database Comparisons.
To start the service:

<table>
<thead>
<tr>
<th>System</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>CentOS 6</td>
<td><code>sudo initctl start diffdogserver</code></td>
</tr>
<tr>
<td>CentOS 7</td>
<td><code>sudo systemctl start diffdogserver</code></td>
</tr>
<tr>
<td>Debian 8</td>
<td><code>sudo systemctl start diffdogserver</code></td>
</tr>
<tr>
<td>RedHat 6</td>
<td><code>sudo initctl start diffdogserver</code></td>
</tr>
<tr>
<td>RedHat 7</td>
<td><code>sudo systemctl start diffdogserver</code></td>
</tr>
<tr>
<td>Ubuntu 16.04</td>
<td><code>sudo systemctl start diffdogserver</code></td>
</tr>
</tbody>
</table>

To stop the service:

<table>
<thead>
<tr>
<th>System</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>CentOS 6</td>
<td><code>sudo initctl stop diffdogserver</code></td>
</tr>
<tr>
<td>CentOS 7</td>
<td><code>sudo systemctl stop diffdogserver</code></td>
</tr>
<tr>
<td>Debian 8</td>
<td><code>sudo systemctl stop diffdogserver</code></td>
</tr>
<tr>
<td>RedHat 6</td>
<td><code>sudo initctl stop diffdogserver</code></td>
</tr>
<tr>
<td>RedHat 7</td>
<td><code>sudo systemctl stop diffdogserver</code></td>
</tr>
<tr>
<td>Ubuntu 16.04</td>
<td><code>sudo systemctl stop diffdogserver</code></td>
</tr>
</tbody>
</table>
3.6 Starting and Stopping Services (macOS)

To start the service:

```bash
sudo launchctl load /Library/LaunchDaemons/com.altova.DiffDogServer.plist
```

To stop the service:

```bash
sudo launchctl unload /Library/LaunchDaemons/com.altova.DiffDogServer.plist
```
3.7 Starting and Stopping Services (Windows)

By default, the DiffDog Server services are automatically started when Windows starts. Follow the instructions below if you need to manage services manually.

To start the service:

- Click the ServiceController icon ( ) in the system notification area, and then select Altova DiffDog Server > Start service.

To stop the service:

- Click the ServiceController icon ( ) in the system notification area, and then select Altova DiffDog Server > Stop service.

You can also start or stop the DiffDog Server services using the Microsoft Management Console (found under Control Panel > Administrative Tools > Services).
4 Running Comparisons

To compare only local files or directories, supply them as arguments to the `diff` command. In this case, if you supply two arguments (for example, two file paths) to the `diff` command, the arguments will be interpreted in the following order: left side of the comparison, right side of the comparison.

```bash
<exec>  diff file1.txt file2.txt --mode=text
```

If you specify three arguments, a three-way comparison takes place, and the arguments are interpreted in this order: left side of the comparison, middle side, and then right side.

```bash
<exec>  diff file1.xml file2.xml file3.xml --mode=xml
```

**Note:** While not mandatory, for best results it is recommended to explicitly set the `--mode` option to either `text`, `binary`, or `xml`. Otherwise, the application would need to determine automatically whether you are comparing files or directories, which may lead to undesired results. In the first example above, the comparison mode is set to `text` since two text files are being compared. In the second example, it is set to `xml` since three XML files are being compared.

Alternatively, you can specify the left and right side of the comparison through options instead of arguments. For example, the command below compares two XML files on the machine where DiffDog Client runs, and both file paths are supplied as options (not arguments):

```bash
<exec>  diff --client-left=file1.xml --client-right=file2.xml
```

When the comparison paths are set as options, you can compare not only files local to the client machine, but also remote files on the machine where DiffDog Server runs. For example, the command below compares two text files where the left one is on the client and the right one is on the server.

```bash
<exec>  diff --client-left=file1.txt --server-right=file2.txt
```

**Note:** The path syntax must be valid for the operating system where the file is. For example, if the client runs on Windows and the server runs on Linux, then a Windows-style path must be used for `--client-left`. Conversely, a Linux-style path must be used for `--server-right`.

To perform a three-way comparison, add a third option (either `--client-middle` or `--server-middle`, depending on where the common ancestor file is). In the example below, the common ancestor file `file2.csv` is on the server machine while the left and right files (`file1.csv`, `file3.csv`) are on the client machine.

```bash
<exec>  diff --client-left=file1.csv --server-middle=file2.csv --client-right=file3.csv
```

If the server administrator has restricted access to server paths for security reasons, you can no longer run comparisons that refer server file paths directly, see also Restricting Access to Server Paths. Instead, you need to specify the name of an alias by means of the `--alias` option.

For example, the command below compares a file on the client with a file on the server. It is assumed that an alias called "public" has already been defined by an administrator on the server.
To query the list of aliases defined on the server, run the `aliases` command. To save an alias as default, set the `server-alias` option in the Client Configuration File. This way, you will no longer need to specify an alias at the command line.

**Note:** Alias names are case-sensitive.
4.1 Comparing Word Documents

You can use DiffDog Server to compare Microsoft Word 2003 or later documents (.docx, .dotx). Microsoft Word is not required to be installed in order to perform such comparisons.

To compare Word documents, invoke the `diff` command similar to how this is done for plain or XML text files, for example:

```
<exec>
  diff "C:\Reports.docx" "C:\ReportsWithFeedback.docx" --mode=doc
</exec>
```

As best practice, set the `--mode=doc` option in order to instruct DiffDog Server to treat the compared files as Word documents.

When comparing Word documents, you can choose whether formatting information such as bold, italic, font size and color should be ignored or taken into account. The `diff` command provides the following options for that purpose:

- `--doc-format-bold, --dfb`
- `--doc-format-font-color, --dfc`
- `--doc-format-font-name, --dff`
- `--doc-format-font-size, --dfs`
- `--doc-format-italic, --dfi`
- `--doc-format-underline, --dfu`

When set to `true`, any of the options above will take into account text with the respective formatting.

In addition, you can set the following options when comparing Word documents:

- `--doc-ignore-blank-lines, --dib`
- `--doc-ignore-case, --doc`
- `--doc-whitespace-mode, --dws`

For Word documents, the comparison outcome is reported by the exit status code, like with other comparison kinds. In addition, if differences exist, a detailed XML report is available. For more information, see Viewing Comparison Results.
### 4.2 Comparing Directories

To compare two local directories side-by-side, call the `diff` command and supply the directory paths as arguments, for example:

```bash
<exec> diff "C:\Reports" "C:\ReportsNew"
```

The example above runs a quick but not exact comparison (which would report just the new or missing files in both directories). This is because the option `--dir-compare-contents` was not specified, so the default value `false` is assumed.

To run a deep comparison which would also check the contents of all files and sub-directories within the compared directories, set the `--dir-compare-contents=true`, for example:

```bash
<exec> diff "C:\Reports" "C:\ReportsNew" --dir-compare-contents=true --mode=auto
```

If both directories contain files of similar type, you might want to set the `--mode` option to indicate which comparison mode you would like to use, for example, `--mode=binary`, `--mode=text`, or `--mode=xml`. Otherwise, set `--mode=auto`, like in the example above. In this mode, the program will compare directory files according to their extension.

Like other comparison kinds, the compared directories can be either on the server or on the client machine. To specify if the directories are on the server or on the client, set the `--server-left/--server-right` or `--client-left/--client-right` options. For example, in the comparison below, the first directory is on the server and the second one is on the client machine:

```bash
<exec> diff --server-left="/home/altova/reports" --client-right="C:\ReportsNew"
```

There are various other options applicable to directories that you can set at the command line, namely:

- `--directory-filter, --df` lets you include or exclude certain files or sub-directories from the comparison based on criteria you define.
- `--dir-compare-mod-times, --dt` adds as comparison criterion the time when the compared directories or files were last modified.
- `--dir-compare-mod-times-ignore-seconds, --di` when comparing modification times (see previous option), this option ignores file or directory modifications made within the specified number of seconds.
- `--dir-compare-sizes, --ds` adds the directory size as comparison criterion.
- `--dir-ignore-case, --dic` ignores case in file and directory names.
- `--output-file, --o` lets you set the name of the report file (text or XML) where the comparison results will be saved.
- `--output-mode, --om` lets you choose a format for the comparison report (XML or text).

The option `--output-mode=text` is not supported if the compared directories include XML files, and if `--dir-compare-contents=true`. The result of comparing XML files can be reported only in XML format.
In addition, when `--dir-compare-contents=true`, you can use all the file comparison options (such as those that begin with `--doc`, `--text`, or `--xml`, see the `diff` command reference). For example, if directories containing text files are compared, you can ignore blank lines or case inside the text files with a command like:

```
<exec> diff "C:\Reports" "C:\ReportsNew" --dir-compare-contents=true --mode=auto --text-ignore-case=true
```
4.3 Viewing Comparison Results

When you run a comparison, the outcome of the comparison is reported by the exit status (return code) of the command that called the DiffDog Server (or DiffDogCmdlClient) executable. For example, the following Windows batch script runs a comparison between two files and gets the exit code from the `%ERRORLEVEL%` environment variable:

```
SET DIFFDOGSERVER="C:\Program Files\Altova\DiffDogServer2020\bin\DiffDogServer.exe"
%DIFFDOGSERVER% diff book1.xml book2.xml --mode=xml
ECHO %ERRORLEVEL%
```

Windows batch script

On a Linux machine, the equivalent script could look like:

```
#!/bin/bash
DIFFDOGSERVER=/opt/Altova/DiffDogServer2020/bin/diffdogserver
${DIFFDOGSERVER} diff book1.xml book2.xml --mode=xml
echo $?
```

Linux shell script

The exit code can have one of the following values:

<table>
<thead>
<tr>
<th>Exit code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No differences exist</td>
</tr>
<tr>
<td>1</td>
<td>Differences exist</td>
</tr>
<tr>
<td>2</td>
<td>An error has occurred</td>
</tr>
</tbody>
</table>

When differences exist (exit code = 1), you can also view a detailed comparison report directly at the command line, or output it to a report in XML or text format. To specify the output format as `text` or `xml`, set the `--output-mode` option. For example, the following command compares two text files using text comparison mode (that is, `--mode=text`) and displays the output as text at the command line:

```
<exec> diff a.txt b.txt --mode=text --output-mode=text
```

To redirect the output to a file, set the `--output-file` option. For example, the following command compares two text files using text comparison mode (that is, `--mode=text`). The output report will be in XML format and it will be redirected to `out.xml` file:

```
<exec> diff a.txt b.txt --mode=text --output-mode=xml --output-file=out.xml
```

**Note:** The option `--output-mode=text` is not supported when comparing XML files or Word documents.

By default, the report containing comparison results is displayed at the command line. To suppress the output, set the option `--quiet=true`, for example:
The following table lists the supported report formats for various comparison kinds.

<table>
<thead>
<tr>
<th>Type of comparison</th>
<th>XML report</th>
<th>Text report</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text (non-binary) files</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>XML files</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Word documents</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Binary files</td>
<td>No</td>
<td>No</td>
<td>To view the comparison outcome for binary files, check the exit code after running a comparison, as described in Binary Files.</td>
</tr>
<tr>
<td>Directories</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

The following sections describe the structure of the comparison report files produced for each of the scenarios above. This information is meant to help you understand the reported differences and might also be useful if you intend to process the report in an automated way.

### 4.3.1 Text Files

When comparing files in text mode, you can view the comparison result in either text or XML format. To understand how DiffDog Server reports differences between text files, let's assume that the following two text files must be compared side-by-side.

<table>
<thead>
<tr>
<th>apples</th>
<th>apples</th>
</tr>
</thead>
<tbody>
<tr>
<td>peaches</td>
<td>nuts</td>
</tr>
<tr>
<td>grape</td>
<td>peaches</td>
</tr>
<tr>
<td>bananas</td>
<td>grapes</td>
</tr>
<tr>
<td>strawberries</td>
<td>bananas</td>
</tr>
</tbody>
</table>

file1.txt  
file2.txt

**Note:** The files used in this example are text files with .txt extension; however, they can be any other non-binary file kinds, such as .html, .json, .js, .cs, and so on.

When compared with a graphical differencing tool like DiffDog, the differences between the two files are represented as shown below. As shown below, there are three differences in total: one line was added, one was changed, and one was deleted.
DiffDog comparison report

In DiffDog Server, you can compare these two files with the command:

```
<exec>diff file1.txt file2.txt --mode=text --output-mode=text --output-file=report.txt
```

**Note:** The `--mode` option instructs the program to treat the compared files as text (not as XML or binary). The `--output-mode` option lets you specify the format the comparison report (text or XML).

In the text report produced after running the comparison, the differences are reported as follows:

```
1a2
> nuts
3c4
< grape
---
> grapes
5d5
< strawberries
```

**DiffDog Server comparison report (text)**

In the report above, “a” indicates an addition, “c” indicates a change, and “d” indicates a deletion. The character “>” points to the right side of the comparison. “<” points to the left side of the comparison. The results must be understood as instructions that one would need to follow in order to make both files equal, namely:

- **1a2** means “After line 1 in the left file, add some text to make it equal with line 2 from the right file”. The next line shows the exact text to be added, in this case, the text “nuts” from the right file.
- **3c4** means “Replace line 3 from the left file with line 4 from the right file”. The next lines show the relevant content from both files, separated by “---”.
- **5d5** means “Delete line 5 of the left file to make it equal with the line 5 from the right file”. The next line shows exactly the text to be deleted (in this case, “strawberries”).

**XML report**

You can also compare the same two files and get the report as XML file, by running the command:

```
<exec>diff file1.txt file2.txt --mode=text --output-mode=xml --output-file=report.xml
```

In you choose XML as reporting format, then the same report is represented as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
```
4.3.2 XML Files

For XML files, you can view the comparison results as XML report only. To understand how differences are reported in XML format, let's assume that the following two XML files must be compared side-by-side:

```
<book id="1">
  <author>Mark Twain</author>
</book>

<book id="2">
  <author>Franz Kafka</author>
</book>
```

If you compare these two files with the command
then the resulting XML report would look similar to the one below:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- Differencing export generated by Altova DiffDog Server -->
<diff_result>
  <diff_info comparison_mode="xml">
    <source_left name="c:\file1.xml" uri="file:///c:/file1.xml"/>
    <source_right name="c:\file2.xml" uri="file:///c:/file2.xml"/>
  </diff_info>
  <xml_diff>
    <left_location>
      <parent xpath="/book"/>
      <position>1</position>
    </left_location>
    <right_location>
      <parent xpath="/book"/>
      <position>1</position>
    </right_location>
    <left_content>
      <attribute id="1"/>
    </left_content>
    <right_content>
      <attribute id="2"/>
    </right_content>
  </xml_diff>
  <xml_diff>
    <left_location>
      <parent xpath="/book/author"/>
      <position>1</position>
    </left_location>
    <right_location>
      <parent xpath="/book/author"/>
      <position>1</position>
    </right_location>
    <left_content>
      <element>Mark Twain</element>
    </left_content>
    <right_content>
      <element>Franz Kafka</element>
    </right_content>
  </xml_diff>
</diff_result>
```

DiffDog Server comparison report (for XML files)

At the very top, the XML report contains a `diff_info` element. The `diff_info` element supplies information about files that were compared (including the comparison mode used, and the path of the compared files). This element occurs only once.
Next, all the encountered differences (two, in this example) are listed by means of multiple `xml_diff` elements. In the context of each difference, the `left_location` (and `right_location`, correspondingly) inform you where the difference was encountered, as an XPath expression. The `left_content` (and `right_content`, correspondingly) inform you about the exact element or attribute that is changed.

### 4.3.3 Binary Files

When you compare files in binary mode (that is, when the option `--mode=binary`), DiffDog Server creates no output report, since listing differences is not meaningful for binary files. In such cases, check the exit code to view the comparison outcome.

<table>
<thead>
<tr>
<th>Exit code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No differences exist</td>
</tr>
<tr>
<td>1</td>
<td>Differences exist</td>
</tr>
<tr>
<td>2</td>
<td>An error has occurred</td>
</tr>
</tbody>
</table>

For example, the following Windows batch script compares two PDF files in binary mode. The `%ERRORLEVEL%` environment variable provides the exit code with the comparison outcome.

```
SET DIFFDOGSERVER="C:\Program Files\Altova\DiffDogServer2020\bin\DiffDogServer.exe"
%DIFFDOGSERVER% diff book1.pdf book2.pdf --m=binary
ECHO %ERRORLEVEL%
```

**Windows batch script**

On a Linux machine, the equivalent script could look as follows:

```
#!/bin/bash
DIFFDOGSERVER=/opt/Altova/DiffDogServer2020/bin/diffdogserver
${DIFFDOGSERVER} diff book1.pdf book2.pdf --mode=binary
echo $?
```

**Linux shell script**

### 4.3.4 Directories

For directories, you can view the comparison result in either text or XML format, by setting the `--output-mode=text`, or `--output-mode=xml`, respectively. The `--output-mode` option lets you specify the format of the comparison report (text or XML), while the `--output-file` option lets you specify the name of the report file.

The option `--output-mode=text` is not supported if the compared directories include XML files, and if `dir-compare-contents=true`. The result of comparing XML files can be reported only in XML format.
To understand how DiffDog Server reports differences between directories, let's assume that the following two directories must be compared side-by-side.

```
dir1/
|-- documents/
| `-- Don Quixote.txt
| `-- Metamorphosis.txt

dir2/
|-- Don Quixote.txt
| `-- img1.png
| `-- Metamorphosis.txt
```

When compared with a graphical differencing tool like DiffDog (using the quick comparison mode), the differences between the two directories are represented as shown below. As shown below, the sub-directory `documents` was deleted and the file `img1.png` was added in the right directory. Also, the file `Metamorphosis.txt` has a different modification time.

```
Name | Size      | Last modified     | Name    | Size      | Last modified     
documents | 2018-03-27 16:38 |          | Don Quixote.txt | 12019-04-02 11:41 |          
        | 1          | 2019-04-02 11:41 | Don Quixote.txt | 12019-04-02 11:41 |          
        | 13         | 2019-04-02 11:37 | Metamorphosis.txt | 132019-04-02 11:36 |          
```

**DiffDog comparison report**

In DiffDog Server, you can run a quick comparison between these two directories with the command:

```
<exec>b
  diff dir1 dir2 --output-mode=text --output-file=report.txt --dir-compare-sizes=true --dir-compare-mod-times=true
```

**Note:** The comparison above is also "quick" because no directory contents were compared, only the size and modification date of files inside the two directories. To perform a thorough comparison which also takes the file contents into account, add the option `--dir-compare-contents=true`.

In the text report produced after running the comparison, the differences are reported as follows:

```
< documents/
  ! Metamorphosis.txt
> img1.png
```

**DiffDog Server comparison report (text)**

The "<" character indicates the left side of the comparison, while the ">" character indicates the right side. The trailing forward slash denotes a directory (as opposed to a file). The "!" character indicates differences in the corresponding file.

Like with file reports, the information above should be interpreted as instructions that one should follow to make both directories equal. In this example, the instructions must be understood as follows:

1. Add the `documents` sub-directory in the "left" directory
2. Copy the `Metamorphosis.txt` file either from left to right directory, or vice versa.
3. Add the **img1.png** file to the "right" directory.

**Note:** The verb "add" must be changed to "delete" depending on the intended merge direction. In this example, to merge changes from left to right, the first instruction is "add" and the second is "delete". If the merge direction is from right to left, the first instruction is "delete" and the second instruction is "add".

**XML report**

Let's now run the same comparison, and change only the format of the report file from text to XML. In other words, the differencing command has now become:

```diff
<exec>
  diff dir1 dir2 --output-mode=xml --output-file=report.xml --dir-compare-sizes=true --dir-compare-mod-times=true
</exec>
```

In the XML report produced after running the comparison, the differences are reported as follows:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- Differencing export generated by Altova DiffDog Server -->
<diff_result>
  <diff_info comparison_mode="quick">
    <source_left name="c:\dir1" uri="file:///c:/dir1"/>
    <source_right name="c:\dir2" uri="file:///c:/dir2"/>
  </diff_info>
  <file_diff location="">
    <left_content>
      <directory name="documents"/>
    </left_content>
    <changed_content>
      <file name="Metamorphosis.txt"/>
    </changed_content>
    <right_content>
      <file name="img1.png"/>
    </right_content>
  </file_diff>
</diff_result>
```

**DiffDog Server comparison report (XML)**

The **diff_info** element supplies information about directories that were compared (including the comparison mode used, and the path of the compared files). This element occurs only once.

In directory comparison reports, the **file_diff** element occurs only once. It can have multiple occurrences of any of the following child elements: **left_content**, **changed_content**, and **right_content**. These are equivalents of "<", "!", and "" in text reports and have the same meaning as mentioned above.
5 Comparing CSV and Database Data

With DiffDog Server, you can compare database tables, views, or custom recordsets retrieved with the help of SQL queries. In addition, you can add CSV files as data sources and compare them with other CSV files or with database tables, views, or custom recordsets, see CSV Comparisons.

There are two ways to run tabular comparisons in DiffDog Server:

1. Set up a database comparison job in the client configuration file. Once the comparison job is set up, you can run it from the command line by invoking the data-diff command, for example:

   ```
   <exec>
   data-diff <named_datadiff>
   </exec>
   
   Where `<named_datadiff>` refers to a [datadiff] section configured previously in the configuration file.
   
2. Run an existing database data comparison file (.dbdif) previously created with DiffDog Enterprise Edition. For more information about creating database data comparison files, refer to the documentation of DiffDog, see https://www.altova.com/documentation. When you have a .dbdif file, you can run it with the following command:

   ```
   <exec>
   run <dbdiff-file>
   </exec>
   
   If you run the .dbdif file with DiffDog Server on a different machine or operating system, the database drivers required by the connection must be installed on the target operating system as well. Note that some database connections methods supported on Windows are not supported on Linux and macOS, see also Supported Databases.

   The steps below provide an overview of how you can set up and run database comparisons in DiffDog Server (the first approach above). For more information about the second approach, see the run command.

Step 1: Configure the data sources

First, you define two data sources in the client or server configuration file. For each data source, you must specify all the details required to connect to a database and retrieve a table, view, or some custom recordset that will take part in the comparison. For example, you might want to compare the view VWEMPLOYEDATA from an Oracle database with the table EMPLOYEES from a SQLite database. Consequently, you would need to create two data sources: the first one to connect to the Oracle database, and the second one to connect to the SQLite database.

You can define data sources on the machine where DiffDog Command Line client runs, on the server machine, or both. For more information about this step, see Setting up Data Sources.

Step 2: Configure the database comparison job (datadiff)

Next, you define a [datadiff] section (a database comparison) in the configuration file. A database comparison consists of a "left" side and a "right" side. Consequently, in the datadiff section, you specify which of the data sources defined earlier must represent the "left" and "right" side of the comparison. It is also recommended that the datadiff section should specify all the mappings between the left and the right columns. For example, you may want to compare data as follows:
Comparing CSV and Database Data

- Column ID from the left with column SERNO from the right
- Column FULLNAME from the left with column NAME from the right
- Column JOBTITLE from the left with column TITLE from the right.

For more information about this step, see Setting up CSV and Database Comparisons.

Step 3: Run the comparison

Once the previous steps are done, you can run the comparison using the data-diff command, for example:

<exec> data-diff <named_datadiff>

Where <named_datadiff> refers to a [datadiff] section configured previously in the configuration file. For more information, see the reference to the data-diff command.
5.1 Supported Databases

The following table lists the database connection types supported for each platform.

<table>
<thead>
<tr>
<th>Connection Type</th>
<th>Linux</th>
<th>macOS</th>
<th>Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADO</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>ADO.NET</td>
<td>-</td>
<td>-</td>
<td>Yes, with some limitations, see ADO.NET Support Notes</td>
</tr>
<tr>
<td>JDBC</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>ODBC</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>PostgreSQL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SQLite</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

For a database connection to be possible, the required database drivers must be installed on the operating system, namely:

- For ADO.NET connections, the .NET Framework must be installed. Also, the ADO.NET provider of the database vendor must be installed if not already available on your operating system. Note that the ADO.NET providers of certain databases are not supported, see ADO.NET Support Notes.
- For JDBC connections, the JDBC drivers must be added to the CLASSPATH variable. Also, the JRE (Java Runtime Environment) or Java Development Kit (JDK) must be installed. This may be either Oracle JDK or an open source build such as Oracle OpenJDK.
- For ODBC connections, the ODBC driver of the respective database vendor must be installed.

PostgreSQL and SQLite connections are supported natively and do not require any drivers.

You can view at a glance all the database drivers detected on your machine by DiffDog Server by running the `db-drivers` command.

The following databases are supported. While Altova endeavors to support other databases, successful connection and data processing have only been tested with the databases listed below. If your Altova application is a 64-bit version, ensure that you have access to the 64-bit database drivers needed for the specific database you are connecting to.

<table>
<thead>
<tr>
<th>Database</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firebird 2.5.4, 3.0</td>
<td></td>
</tr>
<tr>
<td>IBM DB2 8.x, 9.1, 9.5, 9.7, 10.1, 10.5</td>
<td></td>
</tr>
<tr>
<td>Database</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>IBM Db2 for i 6.1, 7.1, 7.2, 7.3</td>
<td>Logical files are supported and shown as views.</td>
</tr>
<tr>
<td>IBM Informix 11.70, 12.10, 14.10</td>
<td></td>
</tr>
<tr>
<td>MariaDB 10.2, 10.3</td>
<td></td>
</tr>
<tr>
<td>Microsoft Access 2003, 2007, 2010, 2013, 2016, 2019</td>
<td>At the time of writing (early September 2019), there is no Microsoft Access Runtime available for Access 2019. You can connect to an Access 2019 database from Altova products only if Microsoft Access 2016 Runtime is installed and only if the database does not use the &quot;Large Number&quot; data type.</td>
</tr>
<tr>
<td>Microsoft Azure SQL Database</td>
<td>SQL Server 2016 codebase</td>
</tr>
<tr>
<td>MySQL 5.0, 5.1, 5.5, 5.6, 5.7, 8.0</td>
<td></td>
</tr>
<tr>
<td>Oracle 9i, 10g, 11g, 12c, 18, 19</td>
<td></td>
</tr>
<tr>
<td>PostgreSQL 8.0, 8.1, 8.2, 8.3, 9.0.10, 9.1.6, 9.2.1, 9.4, 9.5, 9.6, 10, 11, 12.1</td>
<td>PostgreSQL connections are supported both as native connections and driver-based connections through interfaces (drivers) such as ODBC or JDBC. Native connections do not require any drivers.</td>
</tr>
<tr>
<td>Progress OpenEdge 11.6</td>
<td></td>
</tr>
<tr>
<td>SQLite 3.x</td>
<td>SQLITE connections are supported as native, direct connections to the SQLite database file. No separate drivers are required.</td>
</tr>
<tr>
<td>Sybase ASE 15, 16</td>
<td></td>
</tr>
<tr>
<td>Teradata 16</td>
<td></td>
</tr>
</tbody>
</table>

**ADO.NET Support Notes**

The following table lists known ADO.NET database drivers that are currently not supported or have limited support in DiffDog Server.

<table>
<thead>
<tr>
<th>Database</th>
<th>Driver</th>
<th>Support notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>All databases</td>
<td>.Net Framework Data Provider for ODBC</td>
<td>Limited support. Known issues exist with Microsoft Access connections. It is recommended to use ODBC direct connections instead.</td>
</tr>
<tr>
<td>All databases</td>
<td>.Net Framework Data Provider for OleDb</td>
<td>Limited support. Known issues exist with Microsoft Access connections. It is recommended to use ADO direct connections instead.</td>
</tr>
<tr>
<td>Database</td>
<td>Driver</td>
<td>Support notes</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Firebird</td>
<td>Firebird ADO.NET Data Provider</td>
<td>Limited support. It is recommended to use ODBC or JDBC instead.</td>
</tr>
<tr>
<td>Informix</td>
<td>IBM Informix Data Provider for .NET Framework 4.0</td>
<td>Not supported. Use DB2 Data Server Provider instead.</td>
</tr>
<tr>
<td>Oracle</td>
<td>.Net Framework Data Provider for Oracle</td>
<td>Limited support. Although this driver is provided with the .NET Framework, its usage is discouraged by Microsoft, because it is deprecated.</td>
</tr>
<tr>
<td>PostgreSQL</td>
<td>-</td>
<td>No ADO.NET drivers for this vendor are supported. Use a native connection instead.</td>
</tr>
<tr>
<td>Sybase</td>
<td>-</td>
<td>No ADO.NET drivers for this vendor are supported.</td>
</tr>
</tbody>
</table>
5.2 Setting up Data Sources

Before you can perform comparison of tabular data originating from a database, a data source which includes the database connection details and other configuration parameters must be configured. One data source must exist for each database table, view, or custom SQL query that you want to include in the comparison. If CSV files are involved in the comparison, then a data source must exist for each CSV file as well.

To configure a data source, open the client configuration file and add a new `[datasource:<name>]` section, where `<name>` is the unique name by which you want to identify this data source. The parameters that may be present in a `[datasource]` section are listed below.

You can also add data sources to the server configuration file. This is useful if you need to connect to the data source from the machine where DiffDog Server (not the DiffDog Command Line Client) runs. However, note that server-side connections that require Windows authentication for databases like SQL Server may encounter issues in this case, because the DiffDog Server service runs as a separate user who may not have access to the database. The workaround in that case is to define the data source in the client configuration file—the DiffDog Command Line Client runs as the user running the `data-diff` command.

As stated previously, each data source must provide one table, view or some custom named recordset retrieved by a SQL query. To specify this, set the `table` or `sql` options below (they are mutually exclusive). Importantly, for each table, view, or recordset, there should be at least one column which guarantees the uniqueness of each row. This column (or multiple columns) are subsequently referred to as the "key" columns. If the table has a primary key, a key column already exists and the uniqueness of the row is guaranteed. Otherwise, it is recommended that you specify one or more columns that should be treated as "key" columns. You can do this by setting the `key-columns-by-name` and `key-columns-by-ordinal` options below.

**type**
Mandatory parameter. Specifies the type of the database connection. Valid values are `ado`, `adonet`, `csv`, `jdbc`, `odbc`, `postgresql`, and `sqlite`. Example:

```plaintext
type=sqlite
```

Connections of type `csv`, `postgresql` and `sqlite` are built-in and do not require any drivers. For other database kinds, choose a database connection method that is suitable for the machine that will be running the comparison job. Such connections require that the corresponding database drivers be installed on the machine. For more information, see Supported Databases.

**path**
This parameter specifies the path to the database file. It is applicable for CSV files and SQLite databases. Do not set this parameter if you set the `connection` parameter, because they are mutually exclusive.

```plaintext
path=C:\Articles.sqlite
```

**SQLite**

```plaintext
path=C:\data.csv
```
CSV

**connection**
Conditional parameter. Specifies the database connection string. Do not set this parameter if you set the path parameter, because they are mutually exclusive.

```sql
connection=Data Source=DBSQLSERV;User ID=altova_user;Password=dhjdf84h;Provider=SQLNCLI11.1;Initial Catalog=NANONULL;Persist Security Info=true
```

**SQL Server (ADO)**

```sql
connection=jdbc:db2://mydb2-105:50000/NANONULL
```

**DB2 (JDBC)**

```sql
connection=jdbc:oracle:thin:@dbora12c:1521:orcl12c
```

**Oracle (JDBC)**

```sql
connection=my.dbserver.com
```

**PostgreSQL (Native)**

**Note:** For native PostgreSQL connections, the connection can also be the IP address of the database server, for example, 127.0.0.1. The database and port of a native PostgreSQL connection are specified in the database and port options.

Call the `db-drivers` command to view connections available on the local machine, displayed in a format that you can copy-paste. Also, if you have licensed DatabaseSpy, you can create a database connection from there, and then reuse the connection details as displayed in the Properties window.

**database**
Mandatory and applicable only for native PostgreSQL connections. Specifies the database of the PostgreSQL connection.

```sql
database = ZooDB
```

**port**
Specifies the port of the PostgreSQL database connection. Applicable only for native PostgreSQL database connections.
separator
Optional parameter. Applicable only for CSV data sources. It indicates the field separator used in the CSV file. If not specified, the default separator is assumed to be comma. Valid values are comma (default), tab, and semicolon.

```
separator=comma
```

table
Conditional parameter. Specifies the full name of the database table or view to be used in the left or right part of the comparison. If you configure this parameter, do not set the sql parameter, because they are mutually exclusive. Examples:

```
table=[HR].[dbo].[Employees]
```

**SQL Server**

```
table="ALTOVA_ADMIN"."customers"
```

**IBM DB2**

**Tip:** If you have DatabaseSpy installed, you can easily obtain the full table name by right-clicking the table in Online Browser, and then selecting Show in new SQL Editor | Path from the context menu.

key-columns-by-name
For each table, view, or recordset, there should be at least one column which guarantees the uniqueness of each row. This column (or multiple columns) are subsequently referred to as the "key" columns. If the table has a primary key, a key column already exists and the uniqueness of the row is guaranteed. Otherwise, it is recommended that you specify one or more columns that should be treated as "key" columns. These don't necessarily have to be columns that are part of an actual primary or unique key on the table. Examples:

```
key-columns-by-name="guid"
```

```
key-columns-by-name="first_name","last_name","email"
```

Defining "key" columns is optional but should be done as best practice. If you don't define the "key" columns, the application will determine them automatically, but this may not work consistently across all database drivers. Also, detection works for tables or views only, so it is recommended that you define the "key" columns explicitly if you are using SQL queries that return computed values or results returned by stored procedures.

If you specify key columns, then the number of key columns must be the same for the "left" and "right" data source. For example, if you specify two key columns for the left data source and only one key column for the right data source, the comparison will fail with an error.
In case of CSV files, you can refer to key columns by name as follows:

- If the first row of the CSV file contains the column names, you can use the column name, for example:

  ```
  key-columns-by-name="first","last"
  ```

- If there is no header row in the CSV file, you can use the conventional names `c1`, `c2`, `c3`, and so on, where each number identifies that respective column, for example:

  ```
  key-columns-by-name=c1,c2
  ```

**key-columns-by-ordinal**

You can specify a "key" column either by name (see above) or by its ordinal number in the table, starting with 1. This option lets you specify key columns by their ordinal number. Examples:

```
key-columns-by-ordinal=1
```

```
key-columns-by-ordinal=1,2,5
```

If you specify key columns, then the number of key columns must be the same for the "left" and "right" data source.

**user**

Conditional parameter. Specifies the username required to connect to the database. This parameter is not necessary if the database accepts anonymous connections, or if the connection string already includes the username (see the connection parameter).

**pass**

Conditional parameter. Specifies the password required to connect to the database. This parameter is not necessary if the database accepts anonymous connections, or if the connection string already includes the password (see the connection parameter).

**assembly**

This option is mandatory for ADO.NET connections. Examples:

```
assembly=System.Data.SqlClient.SqlClientFactory, System.Data, Version=4.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089
```

*.NET Framework Data Provider for SQL Server*

```
assembly=IBM.Data.DB2.iSeries.iDB2Factory, IBM.Data.DB2.iSeries, Version=12.0.0.0, Culture=neutral, PublicKeyToken=9cdb2ebf1f93a26
```
Comparing CSV and Database Data

.NET Framework Data Provider for IBM i

Run the `db-drivers` command to view .NET assemblies available on the local machine, displayed in a format that you can copy-paste.

class
This option is mandatory for ADO.NET and JDBC connections. Examples:

```
class=com.ibm.db2.jcc.DB2Driver
```

*IBM DB2 via JDBC*

class=com.mysql.jdbc.Driver

*MySQL via JDBC*

class=System.Data.SqlClient

*SQL Server via ADO.NET*

Run the `db-drivers` command to view the JDBC drivers available on the local machine, displayed in a format that you can copy-paste.

sql
Conditional parameter. Specifies a SELECT query in the syntax of the current database. The recordset retrieved by the SELECT query may be used as the left or right part of the comparison. If you set this parameter, do not set the `table` parameter, because they are mutually exclusive. Examples:

```
sql="SELECT * FROM employees WHERE a > 5 and b < 6 ORDER BY c"
```

*SELECT query*

```
sql="EXEC dbo.uspGetEmployeeManagers @BusinessEntityID = 50"
```

*Stored procedure*

If you specify a stored procedure call, it is expected that the stored procedure returns a recordset, not just output parameters.

has-header-row
Optional parameter. Applicable only for CSV files. Valid values are `true` or `false`. If set to true, the first row of the CSV file is treated as a header column and does not take part in the comparison.

```
has-header-row=true
```
5.3 Setting up CSV and Database Comparisons

A database data comparison involves comparing a "left" data source (table, view, or recordset retrieved by a SQL query) with a "right" one.

To configure a data comparison, open the client configuration file and add a new `[datadiff:<name>]` section, where `<name>` is the unique name by which you want to identify this database comparison. In the database comparison job, you essentially specify what should be "left" data source and what should be the "right" one. It is assumed that you have already created two or more data sources as described in Setting up Data Sources.

The parameters that may be present in a `[datadiff]` section are listed below.

**enable-driver-logging**
Optional parameter. Turn it on if you need the database driver to return more detailed information in case of errors. Example:

```
enable-driver-logging=true
```

Note that enabling this option may slow down execution.

**server-left, server-right**
Conditional parameter. This option lets you specify that the left or right data source of the comparison is defined in the server configuration file (not the client configuration file). The option must point to a named data source as it is defined in the server configuration file on the machine where DiffDog Server runs. Example:

```
server-left=products
server-right=resourcesdb
```

To point to a data source on the machine where the DiffDog Command Line Client runs, use the left and right options instead (see below).

**left, right**
Conditional parameter. This option sets the left or right side of the comparison. The option must refer to a named data source `[datasource:<some_name>]` as it was defined in the client configuration file on the machine where the comparison runs. Example:

```
left=hr
right=testdb
```

If you don't set these options, then the server-left or server-right options must be set instead. Combined comparison between client data sources and server data sources are also possible, for example:

```
left=hr
server-right=testdb
```
In the example above, the data source "hr" is on the machine where DiffDog Command Line client runs (without a server). The data source "testdb" is defined in the server configuration file on the machine where DiffDog Server runs.

**map**

Optional parameter. This option specifies which columns from the left side of the comparison should be compared to those from the right side of the comparison. For example, you might want to compare columns `col1`, `col2`, `col3` from the "left" table with columns `colA`, `colB`, `colC` from the "right" recordset. To indicate a column, you can specify either the ordinal number of the column, starting with 1, or the column name. If you use the column name, the name must be enclosed within quotes. Example:

```
map = 1 => "col 2", 2 => "col1", "h" => 6, "i" => "x"
```

For each pair of columns shown above, the part before "=>" means "on the left side" and the part after "=>" means "on the right side".

In case of CSV files, you can refer to columns by using either the column name (if the first row is a header), or by using `c1`, `c2`, and so on, where the number corresponds to the column index, starting with 1.

```
map=1=>c1,2=>c2
```

If you don't define column mappings, the application will attempt to map columns automatically based on the name and data type. However, this is not guaranteed to work correctly if the columns on the left and right have different names and types.

**xml-aware**

Optional parameter. When enabled, this option performs XML (not text) comparison for database fields of XML type. This applies only to fields whose data type is recognized by the driver as XML. Database fields which store XML as `varchar` or `clob` are not affected by this option. If you need to treat such fields as XML type, use the `sql` option instead of `table` and perform type conversion to XML by means of SQL queries.

If you set this option, any XML comparison options present in the configuration file or specified at the command line will apply as well. On Windows, if DiffDog is installed on the same machine as the DiffDog Command Line Client, then XML options present in the registry will apply as well. DiffDog Server does not read the Windows registry options. You can always view the current configuration options of the client by running the `showcfg` command. To view the configuration options of the server, run the `showcfg` command of the server executable.

For reference to all XML comparison options, see the `diff` command.

**whitespace-mode**

Optional parameter. Applicable only for database fields of text type such as `varchar`, `clob`, and so on. The option defines how whitespace characters should be treated for comparison. Whitespace characters are any of the following: space, tab, carriage return, and line feed.

```
<table>
<thead>
<tr>
<th>normalize</th>
<th>Text A is equal to Text B if, after normalization, characters in Text A correspond to those in Text B. &quot;Normalization&quot; means that multiple consecutive occurrences of</th>
</tr>
</thead>
</table>
```
whitespace characters are replaced by a single space character. In addition, the leading and trailing whitespace characters are trimmed for each line of text.

| **strip** | Text A is considered equal to Text B if, after stripping whitespace characters, characters in Text A correspond to those in Text B. In other words, any whitespace characters are stripped from the text and considered not relevant for comparison. |

**ignore-case**
Optional parameter. Applicable only for database fields of text type such as varchar, clob, and so on. Valid values:

| **true** | Perform a case-insensitive comparison (for example, "A" and "a" are treated as equal). |
| **false** | (Default) Perform a case-sensitive comparison (for example, "A" and "a" are not treated as equal). |

**server-output-path**
Optional parameter. Specifies the path to which the comparison results will be saved on the server machine, for example:

```
server-output-path=/path/on/server.xml
```

If DiffDog Command Line Client and DiffDog Server run both on the same machine, you can use `server-output-path` and `client-output-path` interchangeably.

If this parameter not set, the comparison output will be displayed at the command line (assuming that you did not set the option `-quiet=true`).

**client-output-path**
Optional parameter. Specifies the path to which the comparison results will be saved on the client machine, for example:

```
client-output-path=/path/on/client.xml
```

If this parameter not set, the comparison output will be displayed at the command line (assuming that you did not set the option `-quiet=true`).

**output-mode**
Optional parameter. Specifies the output format of the comparison result. Valid values are `text`, `xml`, and `sql`, for example:

```
output-mode=xml
```

When this option is not set, the default value is `text`. 
Note that the value `sql` is meaningful only when the right side of the comparison is a database. When `output-mode=sql`, the comparison report will include SQL scripts required to merge data from the left to the right side.

**treat-null-as-empty**

Optional parameter. Enable this option only if you need to treat `NULL` database values as empty strings.

```
treat-null-as-empty=false
```

For example, by default, a comparison between the two recordsets illustrated below will result in a difference, because the second row on the left is empty and not equal to the second row on the right. However, if you set the `treat-null-as-empty` option to `true`, both recordsets will be considered equal.

```
data
| NULL |
| NULL |

| NULL |
```

```
data
| NULL |
| NULL |
| NULL |
```
5.4 Data Source Examples

The following are some example data sources illustrative for various file or database kinds and connection methods. Use this syntax to create a \([\text{datasource}]\) section in a client or server configuration .ini file. Note that there may be more than one way to connect to the same database. For example, on Windows, you can connect to a MySQL database using any of the following connections methods: ADO.NET, JDBC, or ODBC.

Access (ADO)

\[
\text{[datasource:access_data]}
\]

- `type = ado`
- `connection = Data Source=C:\Users\altova\Documents\ZooDB.mdb;Provider=Microsoft.Jet.OLEDB.4.0`
- `table = [ZooDB].[tblAnimals]`

CSV

\[
\text{[datasource:csv_data]}
\]

- `type=csv`
- `path=C:\data.csv`
- `separator=comma`
- `key-columns-by-ordinal=1`
- `has-header-row=false`

IBM DB2 (JDBC)

\[
\text{[datasource:db2_data]}
\]

- `type = jdbc`
- `connection = jdbc:db2://db2server:50000/PRODUCTSDB`
- `class = com.ibm.db2.jcc.DB2Driver`
- `user = dbuser`
- `pass = 75gfljh9`
- `table = "DB_USER"."PRODUCTS"`

IBM DB2 for i (JDBC)

\[
\text{[datasource:db2_i_data]}
\]

- `type = jdbc`
- `connection = jdbc:as400://127.0.0.1`
- `class = com.ibm.as400.access.AS400JDBCDriver`
- `user = DBUSER`
- `pass = 75gfljh9`
- `table = "DBUSER"."PRODUCTS"`

MariaDB (ODBC)

\[
\text{[datasource:mariadb_data]}
\]

- `type = odbc`
Comparing CSV and Database Data

MySQL (ODBC)

```java
Datasource: mysql_data
connection = Dsn=datasource_mysql;
database = zoo
user = dbuser
pass = 75gfljh9
table = `zoo`.`products`
```

Oracle (JDBC)

```java
Datasource: oracle_data
connection = jdbc:oracle:thin:@ora12c:1521:orcl12c
class = oracle.jdbc.driver.OracleDriver
user = dbuser
pass = 75gfljh9
table = "DBUSER"."PRODUCTS"
```

PostgreSQL (Native)

```java
Datasource: postgresql_data
connection = localhost
database = zoo
user = dbuser
pass = 75gfljh9
table = "zoo"."public"."animals"
```

SQLite (Native)

```java
Datasource: sqlite_data
path = c:\comparisons\db\Nanonull.sqlite
table = "main"."products"
```

SQL Server (ADO.NET)

```java
Datasource: sqlserver_data
type = adonet
```
Teradata (JDBC)

```java
connection = jdbc:teradata://teradata16/database=nanonull
user = dbuser
pass = 75gfhlh9
```
5.5 Comparing CSV Data

DiffDog Server can compare data that originates from comma-, semicolon-, and tab-separated files (CSV, TSV). Specifically, files that meet the following criteria are eligible for comparison:

- Each line (row) must contain the same number of fields throughout the file. The file extension is not important.
- The field separators must be one of the following: comma, semicolon, and tab.

Since CSV files are in fact tabular data, you can compare them with data from a database table, view, or custom recordset.

Comparing CSV files in DiffDog Server works in the same way as database comparisons. Namely, you set up the comparison job by editing the DiffDog Server .ini files. An alternative approach, supported only on Windows, is to create the comparison jobs from the graphical user interface of DiffDog Enterprise desktop application, save them as .dbdif files, and then run them on the server. Both approaches are described in more detail below.

Creating comparisons in DiffDog Server

Setting up a comparison job in DiffDog Server involves the following steps:

1. Add a data source that represents the "left" side of comparison to the configuration file. This can be done in either the client or the server configuration file. For CSV files, a typical data source could look as shown below. For more information about the possible keys and their meaning, see Setting up Data Sources.

```ini
[datasource: left_data]
type=csv
path=C:\left.csv
separator=comma
key-columns-by-ordinal=1
has-header-row=false
```

2. Add the second data source (the "right" side of the comparison).

```ini
[datasource: right_data]
type=csv
path=C:\right.csv
separator=comma
key-columns-by-ordinal=1
has-header-row=false
```

3. Add a data comparison job where you indicate what is the left and right data source, the columns to be compared, and other parameters. The map option lets you specify which columns take part in the comparison (the first and second columns, in this example).
Comparing CSV and Database Data

Comparing CSV Data

In this example, the output of the CSV comparison is reported as XML, as shown by the `output-mode=xml` option. Another option is `output-mode=text`. If the right side of the comparison is a database, you can also use `output-mode=sql`, and in this way you can obtain SQL scripts to merge data from the left to the right side. By default, the report is displayed at the command line, but you can optionally redirect it to a file, by adding the `client-output-path` option:

```
client-output-path=/home/report.xml
```

For more information, see Setting up CSV and Database Comparisons.

4. Call the executable and run the `data-diff` command. In the code listing below, the configuration file is supplied using the `--c` option and the job name is supplied as argument:

```
exec data-diff --c=client_config.ini reports
```

You can also set or override the output format for the comparison report at the command line, by adding the `--output-mode` option, for example:

```
exec data-diff --c=client_config.ini reports --output-mode=xml
```

Running comparisons created in DiffDog Enterprise (Windows only)

To use this approach, a DiffDog Enterprise license is required. Note that this approach is supported only if DiffDog Server runs on Windows, because the comparison .dbdif files created with DiffDog desktop application store paths using the Windows syntax.

To create the comparison job in DiffDog desktop:

1. On the File menu, click Compare Database Data.
2. Using the connection wizard, add a data source for the left and right side of the comparison, respectively. This can be either a database or a CSV file.
3. Add the connections (mappings) between columns that you would like to include in the comparison.
4. Optionally, run the comparison by invoking the Diff and Merge | Start Comparison menu command, or by clicking or by pressing F5.
5. On the File menu, click Save, and choose a destination folder for the .dbdif file.

For more information about creating .dbdif files, refer to Altova DiffDog Enterprise documentation.

On the server side, you can run a .dbdif file by calling the `run` command of either the server or client executable, for example:
Notes:

- For the comparison to run successfully, all the CSV file paths that were added on the desktop machine must be valid on the server machine.
- If database connections are involved, the server machine must be configured and capable to handle the connection. For example, if the .dbdif file includes a connection that requires an ODBC driver from the database vendor, that driver must be installed on the server machine as well, see also Supported Databases.

```bash
<exec> run <dbdiff-file>
```
6     DiffDog Server Command Line

This chapter describes the commands exposed by the DiffDog Server executable.

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<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>assignlicense</td>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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<td>Installs DiffDog Server as a service. Windows only.</td>
</tr>
<tr>
<td>license server</td>
<td>Registers DiffDog Server with LicenseServer on the local network.</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td>*.dirdif (directory comparison)</td>
</tr>
<tr>
<td></td>
<td>*.filedif (file comparison)</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>showcfg</td>
<td>Displays current configuration.</td>
</tr>
<tr>
<td>uninstall</td>
<td>Uninstalls DiffDog Server as a service. Windows only.</td>
</tr>
<tr>
<td>verifylicense</td>
<td>Checks if the current DiffDog Server is licensed; optionally, check if a given license key is assigned. Windows only.</td>
</tr>
<tr>
<td>version</td>
<td>Displays the version of the DiffDog Server executable.</td>
</tr>
</tbody>
</table>
6.1 aliases

This command is the same as the `aliases` command of the DiffDog Command Line Client.

**Note:** The `--server` and `--port` options do not apply if this command is run for the DiffDog Server (not client) executable.
6.2 assignlicense (Windows only)

Syntax and description
The assignlicense command is available on Windows only (not on Linux or Mac systems). It uploads a license file to the Altova LicenseServer with which DiffDog Server is registered (see the licenseserver command), and assigns the license to DiffDog Server. It takes the path of a license file as its argument. The command also allows you to test the validity of a license.

```
  diffdogserver assignlicense [options] FILE
```

- The `FILE` argument takes the path of the license file.
- The `--test-only` option uploads the license file to LicenseServer and validates the license, but does not assign the license to DiffDog Server.

For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/AltovaLicenseServer/).

Casing and slashes on the command line
- **DiffDogServer** on Windows
- **diffdogserver** on Windows and Unix (Linux, Mac)

  * Note that lowercase (`diffdogserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`DiffDogServer`) works only on Windows and Mac.
  * Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes and spaces on Windows systems
On Windows systems: When spaces occur (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces and an end backslash, write it like this: "C:\My Directory\".

Examples
Examples of the assignlicense command:

```
  diffdogserver assignlicense C:\licensepool\mylicensekey.lic
  diffdogserver assignlicense --test-only=true C:\licensepool\mylicensekey.lic
```

- The first command above uploads the specified license to LicenseServer and assigns it to DiffDog Server.
- The last command uploads the specified license to LicenseServer and validates it, without assigning it to DiffDog Server.
Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `true`. Use the `--h, --help` option to display information about the command.

* test-only [t]
  
  `--t, --test-only = true|false`
  
  Values are `true|false`. If `true`, then the license file is uploaded to LicenseServer and validated, but not assigned.
6.3 createconfig

This command creates a **server configuration file** with default settings for all options. Note that running this command without specifying the `--force` option will overwrite any existing configuration file. If you do not want that, set the `--force` option to `false`.

**Syntax**

```
<exec> createconfig [options]
```

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix `./` before the name of the executable when calling it from the current directory of the command shell.

**Options**

`--force`, `--f`

Values are `true|false`. If `true`, then any existing server configuration file will be overwritten. If `false`, then a new server configuration file will be created only if one doesn't exist already. The default value is `true`.

`--lang`

Sets the value of the `language` parameter in the configuration file. Valid values are `en, es, de, fr, ja`.

**Examples**

To create a default configuration file and set the command line interface language to German, use:

```
diffdogserver createconfig --lang=de
```
6.4 data-diff

This command is the same as the data-diff command of the DiffDog Command Line Client.

**Note:** The --server and --port options do not apply if this command is run for the DiffDog Server (not client) executable.
6.5 datasources

This command is the same as the datasources command of the DiffDog Command Line Client.

**Note:** The `--server` and `--port` options do not apply if this command is run for the DiffDog Server (not client) executable.
6.6 db-drivers

This command is the same as the db-drivers command of the DiffDog Command Line Client.
6.7  diff

This command is the same as the diff command of the DiffDog Command Line Client.

**Note:** The --server and --port options do not apply if this command is run for the DiffDog Server (not client) executable.
6.8 foreground

Not for general use. This command runs the server in console mode (as a command line app, not as a service). This is also the default start-up mode if you invoke the executable without specifying a command. To stop running DiffDog Server in this mode, press Ctrl+C.

Syntax

```
<exec> foreground [options]
```

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix "./" before the name of the executable when calling it from the current directory of the command shell.

Options

--config, --c
This option specifies the path to a server configuration file.

--loglevel, --L
Sets the reporting level for information, warning, and error messages. Valid values:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>Suppress all logging.</td>
</tr>
<tr>
<td>info</td>
<td>Report information, warning, and error messages.</td>
</tr>
<tr>
<td>warning</td>
<td>Report error and warning messages.</td>
</tr>
<tr>
<td>error</td>
<td>(Default) Report only error messages.</td>
</tr>
</tbody>
</table>

--port
This option specifies the port on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a port other than the default 29800. As an alternative to setting this option at the command line, you can set it in the configuration file. Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.

Examples

To start the executable in console mode, use:

```
diffdogserver foreground
```
6.9 help

This command provides contextual help about commands pertaining to DiffDog Server executable.

Syntax

```
<exec> help [command]
```

Where `[command]` is an optional argument which specifies any valid command name.

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix `"./"` before the name of the executable when calling it from the current directory of the command shell.
The `install` command installs DiffDog Server as a service on the server machine. To uninstall DiffDog Server as a service, use the `uninstall` command.

**Syntax**

```
<exec> install
```
6.11 licenseserver

Syntax and description

The licenseserver command registers DiffDog Server with the Altova LicenseServer specified by the Server-Or-IP-Address argument. For the licenseserver command to be executed successfully, the two servers (DiffDog Server and LicenseServer) must be on the same network and LicenseServer must be running. You must also have administrator privileges in order to register DiffDog Server with LicenseServer.

```
diffdogserver licenseserver Server-Or-IP-Address
```

- The Server-Or-IP-Address argument takes the name or IP address of the LicenseServer machine.
- To request an evaluation license for DiffDog Server, submit appropriate values for the --company, --email, and --name options. To request an evaluation license for an additional Altova product (that is, in addition to DiffDog Server), add the --request-eval-license option with a value that is the name of that product. See the list of options below for more information.

Once DiffDog Server has been successfully registered with LicenseServer, you will receive a message to this effect. The message will also display the URL of the LicenseServer. You can now go to LicenseServer to assign DiffDog Server a license. For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/AltovaLicenseServer/).

▼ Casing and slashes on the command line

- DiffDogServer on Windows
- diffdogserver on Windows and Unix (Linux, Mac)

* Note that lowercase (diffdogserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (DiffDogServer) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

▼ Backslashes and spaces on Windows systems

On Windows systems: When spaces occur (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces and an end backslash, write it like this: "C:\My Directory\".

Examples

Examples of the licenseserver command:

```
diffdogserver licenseserver DOC.altova.com
diffdogserver licenseserver localhost
diffdogserver licenseserver 127.0.0.1
```

The commands above specify, respectively, the machine named DOC.altova.com, and the user's machine.
(localhost and 127.0.0.1) as the machine running Altova LicenseServer. In each case, the command registers DiffDog Server with the LicenseServer on the machine specified. The last command calls the server-executable to execute the command.
6.12 run

This command is the same as the run command of the DiffDog Command Line Client.

**Note:** The --server and --port options do not apply if this command is run for the DiffDog Server (not client) executable.
6.13  **showcfg**

The `showcfg` command outputs all the current configuration options in a human readable form. The listed options are grouped into the following categories:

- **Global** - This group lists any options that you've defined in the configuration file.
- **Registry** - (Windows-specific) This group lists options that exist in the Windows registry. This is the case if DiffDog is installed on the same machine. Any custom XML or directory filters that you created in DiffDog also appear here, see the `--directory-filter` and `--xml-filter` options. Any "order by" attribute lists that you created in DiffDog also appear here, see the `--xml-order-by-attribute-list` option.
- **Built-In** - This group lists options that are built into the executable. The application will default to these options when no others exist.

**Syntax**

```
<exec> showcfg
```

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix "./" before the name of the executable when calling it from the current directory of the command shell.
### 6.14 uninstall (Windows only)

The `uninstall` command uninstalls DiffDog Server as a service on the server machine. To re-install DiffDog Server as a service, use the `install` command.

**Syntax**

```
<exec> uninstall
```
6.15 verifylicense (Windows only)

Syntax and description
The `verifylicense` command checks whether the current product is licensed. Additionally, the `--license-key` option enables you to check whether a specific license key is already assigned to the product. This command is supported only on Windows systems. It is not supported on Linux or Mac systems.

```
diffdogserver verifylicense [options]
```

- To check whether a specific license is assigned to DiffDog Server, supply the license key as the value of the `--license-key` option.

For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/AltovaLicenseServer/).

▼ Casing and slashes on the command line
- `DiffDogServer` on Windows
- `diffdogserver` on Windows and Unix (Linux, Mac)

* Note that lowercase (`diffdogserver`) works on all platforms (Windows, Linux, and Mac), while uppercase (`DiffDogServer`) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Examples
Example of the `verifylicense` command:

```
diffdogserver verifylicense
diffdogserver verifylicense --license-key=ABCD123-ABCD123-ABCD123-ABCD123-ABCD123-ABCD123
```

- The first command checks whether DiffDog Server is licensed.
- The second command checks whether DiffDog Server is licensed with the license key specified with the `--license-key` option.

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `TRUE`. Use the `--h, --help` option to display information about the command.

▼ `license-key` [l]
```
--l, --license-key = Value
```
Checks whether DiffDog Server is licensed with the license key specified as the value of this option.
6.16  version

Displays the version of the DiffDog Server executable. This command takes no options or arguments.

Syntax

```
<exec>  version
```

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix "./" before the name of the executable when calling it from the current directory of the command shell.
7 DiffDog Client Command Line

This chapter describes the commands exposed by the DiffDog Command Line Client.

- aliases
- data-diff
- datasources
- db-drivers
- diff
- help
- run
- showcfg
- version

To display help for any of these commands directly at the command line, use:

```
DiffDogCmdlClient help <command>
```

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix "./" before the name of the executable when calling it from the current directory of the command shell.

For the path to the DiffDog Command Line Client (abbreviated as `DiffDogCmdlClient`), see [How It Works](#).
7.1 aliases

If the server administrator has restricted access to server paths for security reasons, you can no longer run comparisons that refer server file paths directly, see also Restricting Access to Server Paths. Instead, you need to specify the name of an alias by means of the \texttt{--alias} option.

This command outputs all the aliases defined on the server side. The output of this command depends on the value of the \texttt{hide-alias-paths} option in the server configuration file. If \texttt{hide-alias-paths=false}, the output displays all aliases along with the paths they reference. Otherwise, the command returns just the list of configured aliases.

You can also call this command by typing \texttt{list-aliases} instead of \texttt{aliases}.

Syntax

\begin{verbatim}
DiffDogCmdlClient aliases
\end{verbatim}

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix "./" before the name of the executable when calling it from the current directory of the command shell.

Options

\texttt{--config, --c}
This option specifies the path to a client configuration file where the connection details to DiffDog Server are defined.

If you do not set the \texttt{--c} option, the DiffDog Command Line Client executable attempts to read the client configuration file from the same directory. If there is no configuration file in the same directory as the executable, the default values as described in the command line help and this documentation apply.

\texttt{--loglevel, --L}
Sets the reporting level for information, warning, and error messages. Valid values:

\begin{verbatim}
none       Suppress all logging.
info       Report information, warning, and error messages.
warning    Report error and warning messages.
error      (Default) Report only error messages.
\end{verbatim}

\texttt{--port}
This option specifies the port on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a port other than the default 29800. As an alternative to setting this option at the command line, you can set it in the Client Configuration File. Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.

\texttt{--server}
This option specifies the server address on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a server other than the default localhost. As an alternative to setting this
option at the command line, you can set it in the Client Configuration File. Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.
7.2 data-diff

The data-diff command runs one or more database data comparison jobs configured previously. By default, the comparison result is displayed at the command line in XML format. You can control the output kind (text, XML) by setting the output-mode option from the configuration file. The path of the output file is set from either the client-output-path or server-output-path options. For more information about setting up database comparison jobs, see Comparing CSV and Database Data.

Running *.dbdif files with DiffDog Server is most convenient if DiffDog Server runs either on the same computer as DiffDog desktop, or on a Windows machine. If DiffDog Server runs on a different machine or operating system, the following limitations apply:

- If the comparison involves CSV files, running .dbdif files is supported only on Windows servers. For the comparison to be successful, all the CSV file paths that were valid on the desktop machine must be valid on the server machine.
- If database connections are involved, the server machine must be configured and capable to handle the database connection. Namely, the database drivers and any other prerequisites required by the connection must be present on the target operating system as well. For example, if the .dbdif file includes a connection that requires an ODBC driver from the database vendor, that driver must be installed on the server machine as well. Note that some database connections methods supported on Windows are not supported on Linux and macOS. For more information, see Supported Databases.

If you set up comparison jobs directly in DiffDog Server (as opposed to using *.dbdif files), you can run them regardless of the platform.

To get the comparison outcome as a numeric value, check the value of the %ERRORLEVEL% environment variable after running this command. The possible values are:

<table>
<thead>
<tr>
<th>Exit code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No differences exist</td>
</tr>
<tr>
<td>1</td>
<td>Differences exist</td>
</tr>
<tr>
<td>2</td>
<td>An error has occurred</td>
</tr>
</tbody>
</table>

Syntax

```bash
diffdogcmdclient data-diff [options] {job} ...
diffdogcmdclient data-diff ...
```

Where job refers to a [datadiff] section defined in the client configuration file. You can specify the job argument more than once in order to run multiple database comparison jobs in one run of the command.

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix “./” before the name of the executable when calling it from the current directory of the command shell.

This command can also be called using the compare-data alias. You can use compare-data and data-diff interchangeably.
Options
The options applicable to the `data-diff` command are listed below.

`--config, --c`
This option specifies the path to a configuration file where the `<named_datadiff>` was defined.

If you do not set the `--c` option, the DiffDog Command Line Client executable attempts to read the client configuration file from the same directory. If there is no configuration file in the same directory as the executable, the default values as described in the command line help and this documentation apply.

`--loglevel, --L`
Sets the reporting level for information, warning, and error messages. Valid values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>Suppress all logging.</td>
</tr>
<tr>
<td>info</td>
<td>Report information, warning, and error messages.</td>
</tr>
<tr>
<td>warning</td>
<td>Report error and warning messages.</td>
</tr>
<tr>
<td>error</td>
<td>(Default) Report only error messages.</td>
</tr>
</tbody>
</table>

`--port`
This option specifies the port on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a port other than the default 29800. As an alternative to setting this option at the command line, you can set it in the Client Configuration File. Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.

`--quiet, --q`
Prevents the standard output from being displayed at the command line. Valid values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>true</td>
<td>Do not display standard output in the terminal window.</td>
</tr>
<tr>
<td>false</td>
<td>(Default) Display standard output in the terminal window.</td>
</tr>
</tbody>
</table>

`--output-mode, --om`
This option specifies the format of the comparison report. Valid values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>Output the report in text format.</td>
</tr>
<tr>
<td>sql</td>
<td>Output the report in SQL format. This value is meaningful when the right side of the data comparison is a database. It contains SQL statements that merge data from the left to the right side of the comparison. For example, if there are missing rows on the right, INSERT statements are generated. Conversely, if there are extra rows on the right, DELETE statements are generated. For changed values, UPDATE statements are generated.</td>
</tr>
<tr>
<td>xml</td>
<td>Output the report in XML format.</td>
</tr>
</tbody>
</table>

The default option is `sql`. However, when the left side of the comparison is a database and the right side is a CSV file, the default option is `text`. 
**--server**
This option specifies the server address on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a server other than the default *localhost*. As an alternative to setting this option at the command line, you can set it in the [Client Configuration File](https://www.altova.com/help/diffdog/setting-up-client-and-server.html#client-configuration-file). Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.

**Example**
The following command runs a single database data comparison job called "reports".

```bash
diffdogcmdlclient data-diff reports
```

It is assumed that the client configuration file contains a `[datadiff:reports]` section, for example:

```plaintext
[datasource:left_data]
type = sqlite
path = c:\comparisons\db\Nanonull_Left.sqlite
table = "main"."products"

[datasource:right_data]
type = adonet
connection = Data Source=SQLSERV16;Initial Catalog=NANONULL;MultipleActiveResultSets=True;Password=7thiu57;Persist Security Info=True;User ID=altova
assembly = System.Data.SqlClient.SqlClientFactory, System.Data, Version=4.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089
class = System.Data.SqlClient
table = [NANONULL].[dbo].[PRODUCTS]

[datadiff:reports]
left = left_data
right = right_data
map = 1 => 1, 2 => 2, 3 => 3
output-mode=text
client-output-path=c:\comparisons\db\result.txt
```

In the configuration file above, the `[datasource:left_data]` and `[datasource:right_data]` are two data sources that provide data for the left and right side of the comparison. The *left_data* points to table "products" from a local SQLite database. The *right_data* points to table "PRODUCTS" of a SQL Server database. Both tables have a primary key, so it is not necessary to specify a key column using the option *key-column-by-name*.

The `[datadiff:reports]` section sets both data sources above as the left and right side of the comparison. In addition, it maps the columns that are to be compared. In this example, the first, second, and third columns from the left are mapped with the first, second, and third columns from the right, respectively. The comparison result is set to be in text format and it will be saved to a local text file.

This is not an exhaustive list of options; for reference to all the options you can define in a data source, see [Setting up Data Sources](https://www.altova.com/help/diffdog/setting-up-client-and-server.html#setting-up-data-sources). For options you can define in a database comparison job, see [Setting up CSV and Database Comparisons](https://www.altova.com/help/diffdog/setting-up-client-and-server.html#setting-up-csv-and-database-comparisons).
7.3 datasources

The datasources command lists all the data sources defined in the server configuration file on the machine where DiffDog Server is installed. For more information about data sources, see Setting up Data Sources.

Syntax

```
DiffDogCmdlClient datasources [options]
```

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix "/" before the name of the executable when calling it from the current directory of the command shell.

This command can also be called using the list-datasources alias. You can use datasources and list-datasources interchangeably.

Options

The options applicable to the datasources command are listed below.

`--config, --c`
This option specifies the path to a client configuration file where the connection details to DiffDog Server are defined.

If you do not set the `--c` option, the DiffDog Command Line Client executable attempts to read the client configuration file from the same directory. If there is no configuration file in the same directory as the executable, the default values as described in the command line help and this documentation apply.

`--loglevel, --L`
Sets the reporting level for information, warning, and error messages. Valid values:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>Suppress all logging.</td>
</tr>
<tr>
<td>info</td>
<td>Report information, warning, and error messages.</td>
</tr>
<tr>
<td>warning</td>
<td>Report error and warning messages.</td>
</tr>
<tr>
<td>error</td>
<td>(Default) Report only error messages.</td>
</tr>
</tbody>
</table>

`--port`
This option specifies the port on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a port other than the default 29800. As an alternative to setting this option at the command line, you can set it in the Client Configuration File. Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.

`--server`
This option specifies the server address on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a server other than the default localhost. As an alternative to setting this option at the command line, you can set it in the Client Configuration File. Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.
7.4 db-drivers

The db-drivers command is typically useful when you need to perform database data comparisons. This command displays all ADO, ADO.NET, JDBC, and ODBC drivers detected on the local machine. The displayed driver information is INI-file friendly, in the sense that it is in the syntax required for creating database connections in the server or client .ini configuration files, see Setting up Data Sources.

The output of the command is grouped in the following sections:

- **ADO.NET** - Displays all detected .NET providers
- **ADO** - Displays all detected ADO providers
- **JDBC** - Displays all JDBC drivers detected automatically from the CLASSPATH environment variable.
- **ODBC** - Displays all detected ODBC data source names (DSNs). These are the same data sources that are displayed when you run the ODBC Data Source Administrator (Odbcad32.exe). Note that the 32-bit version of the Odbcad32.exe file is in the C:\Windows\SysWoW64 directory. The 64-bit version of the Odbcad32.exe file is in the C:\Windows\System32 directory.
- **Built-in** - Displays those database connection methods that have built-in support in DiffDog Server and do not require drivers.

Only drivers that correspond to the platform of DiffDog Server (64-bit or 32-bit) are listed. For example, if the currently installed Java Virtual Machine is 64-bit, the JDBC drivers will be detected only when the command is run by DiffDog Server 64-bit. The same is true for ODBC data source names (DSNs).

This command takes no options or arguments.

**Syntax**

```
DiffDogCmdlClient db-drivers
```

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix "./" before the name of the executable when calling it from the current directory of the command shell.

This command can also be called using the list-db-drivers alias. You can use db-drivers and list-db-drivers interchangeably.
7.5  diff

The `diff` command performs a side-by-side comparison of two files, directories, or URLs. The entities to be compared can be of different kinds (for example, you can compare a URL like `http://server/file.txt` to a file path like `C:\file.txt`). Note that it is valid to compare files with URLs, for example, but not files and directories (or URLs and directories).

Comparison of Microsoft Word 2003 or later documents (.docx, .dotx) is also supported, see Comparing Word Documents.

Most often, a comparison involves a "left" side and a "right" side to compare; however, three-way comparisons are also possible when comparing files or URLs (not directories). The files or directories to be compared can be on a machine where DiffDog Client runs or on the remote machine where DiffDog Server runs. A combined approach (comparison of local files or directories with remote ones) is also possible.

Syntax

```
DiffDogCmdlClient diff [options] {path path [path]}
```

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix `./` before the name of the executable when calling it from the current directory of the command shell.

This command can also be called using the `compare` alias. You can use `compare` and `diff` interchangeably.

Arguments

`path`

A path may be a file or directory path, or a URL path in the format `http://server/segment`.

Supplying paths as arguments is just one of the two ways to pass input paths to the `diff` command. The second way to supply paths is by setting the options `--client-left`, `--client-right`, or `--server-left`, `--server-right`. Use the second approach if DiffDog Client does not run on the same machine as DiffDog Server.

In other words, if you set the options `--client-left`, `--client-right`, or `--server-left`, `--server-right`, then no paths must be specified as arguments. Otherwise, two paths exactly must be supplied as argument. (To perform a three-way comparison, three paths can be specified as arguments.)

Options

The options applicable to the `diff` command are listed below.

You can specify defaults for most of the options below in the client configuration file. If you use a client configuration file, note the following:

- When an option is set at the command line but it is commented out in client configuration file, the command line option applies.
- When an option is set both at the command line and in client configuration file, the command line option applies.
When an option is not set at the command line but is set (uncommented) in configuration file, the configuration file option applies.

When an option is set neither at the command line nor in the configuration file, it takes the default value as described in the command line help and in the documentation below.

--alias, --a
If the server administrator has restricted access to server paths for security reasons, you can no longer run comparisons that refer server file paths directly, see also Restricting Access to Server Paths. Instead, you need to specify the name of an alias by means of the --alias option.

This option is meaningful if the comparison involves a server path (that is, if options --server-left or --server-right are set). Valid values for this option are aliases as defined in the Server Configuration File. To output the list of available aliases, run the aliases command. For more information, see Restricting Access to Server Paths.

--config, --c
This option specifies the path to a client configuration file. For more information, see Client Configuration File.

If you do not set the --c option, the DiffDog Command Line Client executable attempts to read the client configuration file from the same directory. If there is no configuration file in the same directory as the executable, the default values as described in the command line help and this documentation apply.

--client-left, --cl
This option specifies the left side of the comparison (must be a path to a local file or directory).

--client-middle, --cm
This option is applicable in a 3-way comparison. It specifies the local path to the "middle" file (also known as the "common ancestor").

--client-right, --cr
This option specifies the right side of the comparison (must be a path to a local file or directory).

--dir-compare-contents, --dc
This option specifies if directory comparison should compare file contents in addition to any other options that might be set separately (such as file size and modification date). When this option is false, the comparison ignores file contents (this will result in a faster, though less accurate, comparison). By default, this option is false.

--directory-filter, --df
This option is applicable for directory comparisons. Directory filters enable you to include or exclude certain files or sub-directories from the comparison based on criteria you define. Valid values for this option are directory filters as they are defined in the Client Configuration File, in the [dir.filter] group. For example, if the configuration file defines a filter [dir.filter:svn], use the following syntax to set the filter at the command line:

   --directory-filter=svn
On Windows, when DiffDog is installed on the same machine as DiffDog Server, you can specify as option value any directory filter that already exists in DiffDog (either built-in or custom). For example, to set the built-in filter "No SVN directories" at the command line, use the following syntax:

```
--directory-filter="No SVN directories"
```

To view or create a directory filter in DiffDog:

1. On the Tools menu, click DiffDog Options.
2. Click the Directory Comparison tab.

For more information about creating directory filters with DiffDog, refer to DiffDog documentation (https://www.altova.com/documentation).

If the filter cannot be found, an error occurs and no comparison takes place.

```
--dir-compare-mod-times-ignore-seconds, --dir
This option is applicable for directory comparisons. It specifies that directory comparison should ignore the given number of seconds (+/-) when comparing modification times. By default, it is set to 0, which means the comparison will not ignore modification time differences.
```

```
--dir-ignore-case, --dic
This option is applicable for directory comparisons. By default, this value is false, which means that a case sensitive comparison is performed. For example, the directories below would be treated as not equal (since the file name is different in the right directory).

```
source/
|-- ReadMe.txt
source/
|-- readme.txt
```

To ignore the case and perform a case-insensitive comparison, set this option to true. In this case, a directory called "SomeDir" would be equal to "somedir", or a file "file.TXT" would be equal to "file.txt".

```
--dir-compare-sizes, --ds
This option is applicable for directory comparisons. When set to true, it specifies that directory comparison should compare files by size. Otherwise, this comparison criterion is ignored. By default, this option is false.
```

```
--dir-compare-mod-times, --dt
This option is applicable for directory comparisons. When set to true, it specifies that directory comparison should compare files within a directory by modification time. Otherwise, this comparison criterion is ignored. By default, this option is false.
```

```
--doc-format-bold, --dfb
This option is applicable for comparison of Word documents. Valid values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>true</td>
<td>Take bold formatting into account during comparison.</td>
</tr>
<tr>
<td>false</td>
<td>(Default) Ignore bold formatting.</td>
</tr>
</tbody>
</table>
```

```
--doc-format-font-color, --dfc
This option is applicable for comparison of Word documents. Valid values:
```
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>--doc-ignore-blank-lines, --dib</td>
<td>Take blank lines into account during comparison.</td>
</tr>
<tr>
<td>true</td>
<td>(Default) Ignore blank lines.</td>
</tr>
<tr>
<td>--doc-ignore-case, --doc</td>
<td>Perform a case-insensitive comparison (for example, “A” and “a” are treated as equal).</td>
</tr>
<tr>
<td>true</td>
<td>Perform a case-sensitive comparison (for example, “A” and “a” are not treated as equal).</td>
</tr>
<tr>
<td>false</td>
<td>(Default) Perform a case-sensitive comparison (for example, “A” and “a” are not treated as equal).</td>
</tr>
</tbody>
</table>

**Take font color into account during comparison.**

- **true**
  - Take font color into account during comparison.
  - **false**
    - (Default) Ignore font color.

**Take font name into account during comparison.**

- **true**
  - Take font name into account during comparison.
  - **false**
    - (Default) Ignore font name.

**Take font size into account during comparison.**

- **true**
  - Take font size into account during comparison.
  - **false**
    - (Default) Ignore font size.

**Take italic formatting into account during comparison.**

- **true**
  - Take italic formatting into account during comparison.
  - **false**
    - (Default) Ignore italic formatting.

**Take underline formatting into account during comparison.**

- **true**
  - Take underline formatting into account during comparison.
  - **false**
    - (Default) Ignore underline formatting.
**-doc-mode, --dm**
This option is applicable for comparison of Word documents. Valid values:

<table>
<thead>
<tr>
<th>Sentence</th>
<th>(Default) Perform comparison at sentence level.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paragraph</td>
<td>Perform comparison at paragraph level.</td>
</tr>
</tbody>
</table>

**-doc-whitespace-mode, --dws**
This option is applicable when comparing Word documents or directories containing Word documents. In case of directory comparisons, the option will apply only to Word documents in that directory.

The option defines how whitespace characters should be treated for comparison. Whitespace characters are any of the following: space, tab, carriage return, and line feed.

<table>
<thead>
<tr>
<th>Asis</th>
<th>(Default) Treat whitespace characters as is (that is, do not apply normalization or stripping). This means that whitespace characters are always relevant for comparison.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normalize</td>
<td>Text A is equal to Text B if, after normalization, characters in Text A correspond to those in Text B. “Normalization” means that multiple consecutive occurrences of whitespace characters are replaced by a single space character. In addition, the leading and trailing whitespace characters are trimmed for each line of text.</td>
</tr>
<tr>
<td>Strip</td>
<td>Text A is considered equal to Text B if, after stripping whitespace characters, characters in Text A correspond to those in Text B. In other words, any whitespace characters are stripped from the text and considered not relevant for comparison.</td>
</tr>
</tbody>
</table>

**-ignore-blank-lines**
This option specifies if blank lines should be ignored in comparison. Valid values are `true` and `false`. By default, this value is `false`.

The option applies depending on the current `--mode` option. If `--mode=text`, it applies to text files, and is equivalent to the `--text-ignore-blank-lines` option. If `--mode=xml`, it does not affect the comparison. If `--mode=doc`, it applies to Word documents and is equivalent to `--doc-ignore-blank-lines` option. If you do a directory comparison, it applies to each kind of comparison that might occur in that directory.

**-ignore-case**
This option is applicable to both file and directory comparisons. The option applies depending on the current `--mode` option. If `--mode=text`, it applies to text files, and is equivalent to the `--text-ignore-case` option. If `--mode=xml`, it applies to XML files and is equivalent to `--xml-ignore-case-in-names` and `--xml-ignore-case-in-text` options. If `--mode=doc`, it applies to Word documents and is equivalent to `--doc-ignore-case` option. If you do a directory comparison, it applies to each kind of comparison that might occur in that directory. Valid values:

<table>
<thead>
<tr>
<th>True</th>
<th>Perform a case-insensitive comparison (for example, &quot;A&quot; and &quot;a&quot; are treated as equal).</th>
</tr>
</thead>
<tbody>
<tr>
<td>False</td>
<td>(Default) Perform a case-sensitive comparison (for example, &quot;A&quot; and &quot;a&quot; are not treated as equal).</td>
</tr>
</tbody>
</table>
--loglevel, --L
Sets the reporting level for information, warning, and error messages. Valid values:

<table>
<thead>
<tr>
<th>none</th>
<th>Suppress all logging.</th>
</tr>
</thead>
<tbody>
<tr>
<td>info</td>
<td>Report information, warning, and error messages.</td>
</tr>
<tr>
<td>warning</td>
<td>Report error and warning messages.</td>
</tr>
<tr>
<td>error</td>
<td>(Default) Report only error messages.</td>
</tr>
</tbody>
</table>

--mode, --m
This option specifies the comparison type to be performed. Valid values:

<table>
<thead>
<tr>
<th>auto</th>
<th>(Default) Let the application determine if the supplied arguments are files or directories and set the comparison mode automatically based on file extension. For example, if files are detected to be XML, then an XML comparison is performed. You can always view or change the default mapping between specific file extensions and comparison modes, see Client Configuration File.</th>
</tr>
</thead>
<tbody>
<tr>
<td>binary</td>
<td>Treat files as binary.</td>
</tr>
<tr>
<td>doc</td>
<td>Treat files as Microsoft Word documents.</td>
</tr>
<tr>
<td>text</td>
<td>Treat files as text.</td>
</tr>
<tr>
<td>xml</td>
<td>Treat files as XML.</td>
</tr>
</tbody>
</table>

--output-file, --o
This option enables you to write the command output to a text file on the client machine. The value must specify a valid file path on the client machine. Use the --om option to set the output file format.

--output-mode, --om
This option lets you specify the format in which the comparison output is to be created (text or XML). Valid values:

<table>
<thead>
<tr>
<th>auto</th>
<th>(Default) Let the application decide.</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>Write output file as text.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The option --output-mode=text is not supported when comparing XML files or Word documents.</td>
</tr>
<tr>
<td>xml</td>
<td>Write output file as XML.</td>
</tr>
</tbody>
</table>

--port
This option specifies the port on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a port other than the default 29800. As an alternative to setting this option at the command line, you can set it in the Client Configuration File. Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.
- **--quiet, --g**
  Prevents the standard output from being displayed at the command line. Valid values:

<table>
<thead>
<tr>
<th>true</th>
<th>Do not display standard output in the terminal window.</th>
</tr>
</thead>
<tbody>
<tr>
<td>false</td>
<td>(Default) Display standard output in the terminal window.</td>
</tr>
</tbody>
</table>

- **--server-output-file, --s**
  This option enables you to write the command output to a text file on the server machine. The value must specify a valid file path on the server machine. Use the --om option to set the output file format.

- **--server**
  This option specifies the server address on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a server other than the default localhost. As an alternative to setting this option at the command line, you can set it in the Client Configuration File. Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.

- **--server-left, --sl**
  This option enables you to add a remote path to the comparison. It specifies the left side of the comparison (a path to a file or directory accessible to the server).

- **--server-middle, --sm**
  This option enables you to add a remote path to the comparison. It specifies the middle side of the comparison (applicable in a 3-way comparison). The value must be a path to a file or directory accessible to the server.

- **--server-right, --sr**
  This option enables you to add a remote path to the comparison. It specifies the right side of the comparison (a path to a file or directory accessible to the server).

- **--text-ignore-case, --ic**
  This option is applicable when comparing text documents or directories containing text documents. In case of directory comparisons, the option will apply only to text files in that directory. Valid values:

<table>
<thead>
<tr>
<th>true</th>
<th>Perform a case-insensitive comparison (for example, &quot;A&quot; and &quot;a&quot; are treated as equal).</th>
</tr>
</thead>
<tbody>
<tr>
<td>false</td>
<td>(Default) Perform a case-sensitive comparison (for example, &quot;A&quot; and &quot;a&quot; are not treated as equal).</td>
</tr>
</tbody>
</table>

- **--text-ignore-blank-lines, --ib**
  This option is applicable when comparing text documents or directories containing text documents. In case of directory comparisons, the option will apply only to text files in that directory. The option specifies if blank lines should be ignored in comparison, when comparing text files. Valid values are true and false. By default, this value is false.

- **--text-whitespace-mode, --tws**
  This option is applicable when comparing text documents or directories containing text documents. In case of directory comparisons, the option will apply only to text files in that directory. The option defines how whitespace characters should be treated for comparison. Whitespace characters are any of the following: space, tab, carriage return, and line feed.
asis (Default) Treat whitespace characters as is (that is, do not apply normalization or stripping). This means that whitespace characters are always relevant for comparison.

normalize Text A is equal to Text B if, after normalization, characters in Text A correspond to those in Text B. “Normalization” means that multiple consecutive occurrences of whitespace characters are replaced by a single space character. In addition, the leading and trailing whitespace characters are trimmed for each line of text.

strip Text A is considered equal to Text B if, after stripping whitespace characters, characters in Text A correspond to those in Text B. In other words, any whitespace characters are stripped from the text and considered not relevant for comparison.

```
--whitespace-mode, --ws
```

This option is applicable to file and directory comparisons. The option applies depending on the current `--mode` option. If `--mode=text`, it applies to text files, and is equivalent to the `--text-whitespace-mode` option. If `--mode=xml`, it applies to XML files. If `--mode=doc`, it applies to Word documents and is equivalent to `--doc-whitespace-mode` option. If you do a directory comparison, it applies to each kind of comparison that might occur in that directory based on the file extension.

The option defines how whitespace characters should be treated for comparison. Whitespace characters are any of the following: space, tab, carriage return, and line feed.

If the compared files are XML, normalization and stripping affects whitespace characters that are inside attribute or element values. Other whitespace characters are disregarded.

```
--xml-filter, --xf
```

This option is applicable for XML comparisons. An XML filter contains rules that ignore specific XML attributes or elements for comparison. Valid values for this option are XML filters as they are defined in the Client Configuration File, in the [xml.filter] group. For example, if the configuration file defines a filter `[xml.filter:ignore-abc-elems]`, use the following syntax to set the filter at the command line:

```
--xml-filter=ignore-abc-elems
```

On Windows, when DiffDog is installed on the same machine as DiffDog Server, you can specify as option value any XML filter created with DiffDog. To view or define an XML filter in DiffDog, take the following steps:
1. On the **Tools** menu, click **Comparison Options**.
2. Click the **XML** tab.
3. Locate the option **Filter out specific elements/attributes**, and the click the **Ellipsis** button.

For more information about creating XML filters with DiffDog, refer to DiffDog documentation [here](https://www.altova.com/documentation).

If the filter cannot be found, an error occurs and no comparison takes place.

---

**--xml-ignore-case-in-names, --xicin**

This option is applicable when comparing XML files or directories containing XML files. In case of directory comparisons, the command will apply only to XML files in that directory.

When set to `true`, a case-insensitive comparison of XML identifier names will be performed. For example, let's assume that you want to compare the following XML files:

```xml
<book ID="1"/>
```

```xml
<book id="1"/>
```

In the listing above, the attribute `ID` is uppercase in the left file and lowercase in the right file. If `--xml-ignore-case-in-names=true`, case is ignored, so the files above are treated as equal. By default, this option is `false`, which means files such as the ones above are not equal.

**--xml-ignore-case-in-text, --xicit**

This option is applicable when comparing XML files or directories containing XML files. In case of directory comparisons, the command will apply only to XML files in that directory.

When set to `true`, a case-insensitive comparison of non-markup text will be performed. For example, let's assume that you want to compare the following XML files:

```xml
<book hardcover="yes">
  <genre>fiction</genre>
</book>
```

```xml
<book hardcover="Yes">
  <genre>Fiction</genre>
</book>
```

In the listing above, the value of attribute `hardcover` is lowercase in the left file and capitalized in the right file. The same is true for the value of the `genre` element. To treat these two files as equal, set `--xml-ignore-case-in-text=true`. By default, this option is `false`, which means files such as the ones above are not equal.

**--xml-ignore-markup-attributes, --xima**

This option is applicable when comparing XML files. Valid values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>true</td>
<td>Ignore XML attributes when comparing.</td>
</tr>
<tr>
<td>false</td>
<td>(Default) Take XML attributes into account when comparing.</td>
</tr>
</tbody>
</table>

**--xml-ignore-markup-comments, --ximc**

This option is applicable when comparing XML files. Valid values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>true</td>
<td>Ignore XML comments when comparing.</td>
</tr>
</tbody>
</table>
false | (Default) Take XML comments into account when comparing.

--xml-ignore-markup-cdata, --ximcd
This option is applicable when comparing XML files. Valid values:

true | Ignore XML character data (CDATA) when comparing.
false | (Default) Take XML CDATA into account when comparing.

--xml-ignore-markup-doctype, --ximd
This option is applicable when comparing XML files. Valid values:

true | Ignore XML DOCTYPE declaration when comparing.
false | (Default) Take XML DOCTYPE declaration into account when comparing.

--xml-ignore-markup-processing-instructions, --ximpi
This option is applicable when comparing XML files. Valid values:

true | Ignore XML processing instructions when comparing.
false | (Default) Take XML processing instructions into account when comparing.

--xml-ignore-markup-xml, --ximx
This option is applicable when comparing XML files. Valid values:

true | Ignore XML declarations when comparing.
false | (Default) Take XML declarations into account when comparing.

--xml-ignore-namespace, --xins
This option is applicable when comparing XML files. When set to true, XML namespaces will be ignored. By default, this option is false.

--xml-ignore-prefixes, --xip
This option is applicable when comparing XML files. When set to true, XML prefixes will be ignored. For example, let’s assume that you want to compare the XML files below. Both files contain identical elements but the prefixes are different.

```
<left:table>
  <left:tr>
    <left:td>Name</left:td>
  </left:tr>
</left:table>
```

```
<right:table>
  <right:tr>
    <right:td>Name</right:td>
  </right:tr>
</right:table>
```

By default, the --xml-ignore-prefixes option is false, which means the files will not be considered equal. However, if the option --xml-ignore-prefixes is set to true, then prefixes will be ignored and the files will be considered equal.
**--xml-ignore-text, --xit**
This option is applicable when comparing XML files. When set to true, the text content of XML nodes will be ignored for comparison. This is useful if you want to compare only the structure of two XML files, disregarding the actual node content. By default, this option is false.

**--xml-order-by-attributes, --xoba**
This option is applicable when comparing XML files. Set this option to true if you want all XML attributes to be ordered before comparison. For example, let's assume that you want to compare the following two XML files:


In the listing above, the order of attributes is different in both files, although the attributes are the same. If you set the option --xml-order-by-attributes to true, the application will order attributes before comparison, and, consequently, the files will be reported as equal. The default value is false, meaning that files are not equal if the order of attributes is not the same.

**--xml-order-by-elements, --xobe**
This option is applicable when comparing XML files. Set this option to true if you want all XML elements to be ordered before comparison. For example, let's assume that you want to compare the following two XML files:

| <book>  
|     <author>Franz Kafka</author>  
|     <title>The Metamorphosis</title>  
| </book> | <book>  
|     <title>The Metamorphosis</title>  
|     <author>Franz Kafka</author>  
| </book> |

In the listing above, the left and right files contain exactly the same elements, only in a different order. If you set the option --xml-order-by-elements to true, the application will order all elements before comparison, and consequently, the files will be reported as equal. The default value is false, meaning that files are different if the order of elements is different.

**--xml-order-by-attribute-list, --xobl**
This option is applicable when comparing XML files. There are instances where multiple elements have exactly the same name and attributes, but attribute values are different. To sort by specific attributes before comparing, set this option to a named list of attributes created in the Client Configuration File, in the [xml.orderby:<name_of_your_list>] group.

For example, let's assume that you want to compare the following two XML files:

| <data>  
|     <phone type="work" ext="111"/>  
|     <phone type="work" ext="222"/>  
|     <phone type="work" ext="333"/>  
| </data> | <data>  
|     <phone type="work" ext="333"/>  
|     <phone type="work" ext="111"/>  
|     <phone type="work" ext="222"/>  
| </data> |

In the listing above, the left and right files are not equal. However, if you ordered all phone elements by ext attribute, then the files would become equal. To make such comparisons possible, first modify the client configuration file as follows:
You can now run the `diff` command with the option `--xml-order-by-attribute-list=mylist`. When you do this, the application orders elements by `ext` attribute, and, as a result, the files are reported as equal. If the option `--xml-order-by-attribute-list` is not set, files such as the ones above would be reported as NOT equal.

As an alternative, to order by all attributes, set the option `--xml-order-by-attributes=true` instead of setting this option.

**Note:** If you set the `--xml-order-by-attribute-list` option, make sure to also set the `--xml-order-by-elements=true`.

On Windows, when DiffDog is installed on the same machine as DiffDog Server, you can set this option to a custom attribute list created in DiffDog. To view or create a custom attribute list in DiffDog:

1. On the Tools menu, click Comparison Options.
2. Click the XML tab.
3. Select the Ignore order of child nodes check box.
4. Click Specific attributes, and then click the Ellipsis button.

For more information about creating custom attribute lists with DiffDog, refer to DiffDog documentation (https://www.altova.com/documentation).

`--xml-order-by-text`, `--xobt`

This option is applicable when comparing XML files. There are instances where multiple elements have exactly the same name and attributes; only the text of elements is different. Set this option to `true` if you want to order such elements by their inner text before comparison. For example, let’s assume that you want to compare the following files:

```xml
<data>
  <phone type="mobile">111</phone>
  <phone type="mobile">222</phone>
</data>
```

```xml
<data>
  <phone type="mobile">222</phone>
  <phone type="mobile">111</phone>
</data>
```

In the listing above, the left and right files are not equal. However, if you set the option `--xml-order-by-text` to `true`, the application would order elements by their text, and, as a result, the files would be reported as equal. The default value is `false`, meaning that ordering of elements by text does not take place, and files such as the ones above are not equal.

**Note:** If you set the `--xml-order-by-text` option, make sure to also set the `--xml-order-by-elements=true`.

`--xml-resolve-entities`, `--xre`

This option is applicable when comparing XML files. When set to `true`, then all entities in the document are resolved. Otherwise, the files are compared with the entities as is. By default, this option is `false`. 
--xml-whitespace-mode, --xws
This option is applicable when comparing XML documents or directories containing XML documents. In case of directory comparisons, the option will apply only to XML files in that directory.

The option defines how whitespace characters should be treated for comparison. Whitespace characters are any of the following: space, tab, carriage return, and line feed. This option specifically affects whitespace characters that are inside element and attribute values. Whitespace characters that are outside attribute or element values are disregarded for comparison.

<table>
<thead>
<tr>
<th>asis</th>
<th>(Default) Treat whitespace characters as is (that is, do not apply normalization or stripping). This means that whitespace characters are always relevant for comparison.</th>
</tr>
</thead>
<tbody>
<tr>
<td>normalize</td>
<td>Text A is equal to Text B if, after normalization, characters in Text A correspond to those in Text B. “Normalization” means that multiple consecutive occurrences of whitespace characters are replaced by a single space character. In addition, the leading and trailing whitespace characters are trimmed for each line of text.</td>
</tr>
<tr>
<td>strip</td>
<td>Text A is considered equal to Text B if, after stripping whitespace characters, characters in Text A correspond to those in Text B. In other words, any whitespace characters are stripped from the text and considered not relevant for comparison.</td>
</tr>
</tbody>
</table>

--zip-as-dir, --zd
This option is applicable when comparing ZIP files. When set to true, ZIP files will be treated as directories instead of binary files. By default, this option is false.

Examples
See Running Comparisons.
7.6 help

This command provides contextual help about commands pertaining to DiffDog Command Line Client executable.

**Syntax**

```shell
DiffDogCmdlClient help [command]
```

Where `[command]` is an optional argument which specifies any valid command name.

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix "./" before the name of the executable when calling it from the current directory of the command shell.
7.7 run

The `run` command runs a comparison if given one of the following file kinds as argument:

- `*.dirdif` (directory comparison)
- `*.filedif` (file comparison)
- `*.dbdif` (database data comparison)

You can create `.filedif` and `.dirdif` files with Altova DiffDog desktop application (https://www.altova.com/diffdog), by saving any file or directory comparison as a file. Database data comparisons (.dbdif) can be created only in DiffDog Enterprise edition.

Running `*.filedif` and `*.dirdif` files with DiffDog Server is supported only on Windows. For the comparison to be successful, all the file or directory paths that were valid on the desktop machine must be valid on the server machine. If you set up comparison jobs directly in DiffDog Server (as opposed to using `*.filedif` or `*.dirdif` files), you can run them regardless of the platform.

Running `*.dbdif` files with DiffDog Server is most convenient if DiffDog Server runs either on the same computer as DiffDog desktop, or on a Windows machine. If DiffDog Server runs on a different machine or operating system, the following limitations apply:

- If the comparison involves CSV files, running `.dbdif` files is supported only on Windows servers. For the comparison to be successful, all the CSV file paths that were valid on the desktop machine must be valid on the server machine.
- If database connections are involved, the server machine must be configured and capable to handle the database connection. Namely, the database drivers and any other prerequisites required by the connection must be present on the target operating system as well. For example, if the `.dbdif` file includes a connection that requires an ODBC driver from the database vendor, that driver must be installed on the server machine as well. Note that some database connections methods supported on Windows are not supported on Linux and macOS. For more information, see Supported Databases.

If you set up comparison jobs directly in DiffDog Server (as opposed to using `*.dbdif` files), you can run them regardless of the platform.

After executing the `run` command, DiffDog Server reports the outcome of the comparison using a return status code (`0` = no differences, `1` = differences, `2` = error), similar to how it works with the `diff` command. The output is displayed directly at the command line, unless you suppress it with the `--quiet` option.

For `filedif` or `dirdif` comparisons, you can optionally redirect the output (the comparison result) to a report file in XML or text format. The path of the report file is defined from the graphical user interface of DiffDog desktop application. Namely, in DiffDog, you can set the output path of a `filedif` or `dirdif` comparison as follows:

1. Open an existing `.dirdif` or `.filedif` file (or create a new comparison) in DiffDog.
2. On the **Tools** menu, click **Comparison Document Options**.
3. Do one of the following:
   a. To use no redirection to a file, click **No Export** (this is the default option).
   b. To redirect the report to a text file, click **Text file**, and then enter the path in the adjacent text box.
   c. To redirect the report to an XML file, click **XML file**, and then enter the path in the adjacent text
box.
4. On the File menu, click Save As, and then save the comparison as .filedif (or .dirdif, if applicable).

For .dbdif comparisons, the outcome of the comparison is available only in XML format. Use the command shell redirection to redirect the output to a file, for example:

```
DiffDogCmdlClient run comparison.dbdif >"C:\result.xml"
```

**Syntax**

```
DiffDogCmdlClient run comparison-file1 [comparison-file2 [comparison-fileN]]
```

The `run` command can also be called using the `import` or `load` aliases. Therefore, you can use `run`, `import` or `load` interchangeably.

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix `"./"` before the name of the executable when calling it from the current directory of the command shell.

**Arguments**

`comparison-file`
Specifies the path to a comparison file in .dirdif, .filedif, or .dbdif format. The path of the comparison file can be absolute or relative to the current working directory. You can supply as many comparison files as arguments as required. This is limited only by the number of input characters supported by your command shell.

**Options**

`--config, --c`
This option specifies the path to a client configuration file where the connection details to DiffDog Server are defined.

If you do not set the `--c` option, the DiffDog Command Line Client executable attempts to read the client configuration file from the same directory. If there is no configuration file in the same directory as the executable, the default values as described in the command line help and this documentation apply.

`--port`
This option specifies the port on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a port other than the default 29800. As an alternative to setting this option at the command line, you can set it in the Client Configuration File. Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.

`--quiet, --q`
Prevents the standard output from being displayed at the command line. Valid values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>true</td>
<td>Do not display standard output in the terminal window.</td>
</tr>
<tr>
<td>false</td>
<td>(Default) Display standard output in the terminal window.</td>
</tr>
</tbody>
</table>

`--loglevel, --L`
Sets the reporting level for information, warning, and error messages. Valid values:
### --output-mode, --om

This option specifies the format of the comparison report. Valid values:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>Suppress all logging.</td>
</tr>
<tr>
<td>info</td>
<td>Report information, warning, and error messages.</td>
</tr>
<tr>
<td>warning</td>
<td>Report error and warning messages.</td>
</tr>
<tr>
<td>error</td>
<td>(Default) Report only error messages.</td>
</tr>
</tbody>
</table>

### --server

This option specifies the server address on which DiffDog Server listens for requests. Setting this option is meaningful if DiffDog Server runs on a server other than the default localhost. As an alternative to setting this option at the command line, you can set it in the Client Configuration File. Note that, if you set this value at the command line, it takes precedence over the one defined in the configuration file.

### Example

To run the comparison file `C:\DiffDog\Comparison1.filedif`, use the following command:

```bash
diffdogcmdclient run C:\DiffDog\Comparison1.filedif
```

To run the comparison files `Comparison1.filedif` and `Comparison2.dirdif` (both located in `C:\DiffDog` directory), use the following command:

```bash
diffdogcmdclient run C:\DiffDog\Comparison1.filedif C:\DiffDog\Comparison2.dirdif
```
7.8 **showcfg**

The `showcfg` command outputs all the current DiffDog Client options in a human readable form. The listed options are grouped into the following categories:

- **Application** - This group lists any options that you’ve defined in the client configuration file.
- **Registry** - (Windows-specific) This group lists options that exist in the Windows registry. This is the case if DiffDog is installed on the same machine. Any custom XML or directory filters that you created in DiffDog also appear here, see the `--directory-filter` and `--xml-filter` options. Any “order by” attribute lists that you created in DiffDog also appear here, see the `--xml-order-by-attribute-list` option.
- **Built-In** - This group lists options that are built into the executable. The application will default to these options when no others exist.

**Syntax**

```bash
DiffDogCmdlClient showcfg
```

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix `./` before the name of the executable when calling it from the current directory of the command shell.
7.9  version

Displays the version of the DiffDog Command Line Client executable. This command takes no options or arguments.

Syntax

```
DiffDogCmdlClient version
```

On Linux, use an all-lowercase to call the executable. In addition, on Linux and macOS, you might need to add the prefix "./" before the name of the executable when calling it from the current directory of the command shell.
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